

MARINE RECORD

ESTABLISHED 1878.

VOL. XXII, No. 40.

CLEVELAND---OCTOBER 5, 1899---CHICAGO.

\$2.00 Per Year. 5c. Single Copy.

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

PRESIDENT.		
FRANK J. FIRTH,	Philadelphia.	
1ST VICE-PRESIDENT.		
CAPT. THOS. WILSON,	Cleveland.	
SECRETARY.		
CHARLES H. KEEP,	Buffalo.	
TREASURER.		
GEORGE P. MCKAY,	Cleveland.	
COUNSEL.		
HARVEY D. GOULDER,	Cleveland.	
EXECUTIVE AND FINANCE COMMITTEE.		
JAMES CORRIGAN, Chairman,	Cleveland.	
COMMITTEE ON LEGISLATION.		
GIBSON I. DOUGLAS, Chairman,	Buffalo.	
COMMITTEE ON AIDS TO NAVIGATION		
GEORGE P. MCKAY, Chairman,	Cleveland.	

AGAIN IS AN INTERNATIONAL COMMISSION ENDORSED—MR. THOS. T. MORFORD, GENERAL AGENT ERIE RAILROAD CO. (UNION STEAMBOAT LINE), IS AT ONE WITH FORMER EXPRESSIONS.

CHICAGO, Ill., Oct. 3d, 1899.

THE MARINE RECORD:

Your favor 30th August duly received, but owing to my absence from the city, have been unable to reply before.

I do not think I can add very much of interest relative to the subject of series of canals tapping the lakes, etc., to Mr. Firth's communication to you. Mr. Firth has handled the matter in his usual able manner.

It seems that eminent engineers differ in their estimation as to the reduction of lake levels by the Chicago drainage canal. I have read many of their articles and known as little about it as if I had read none. My opinion is that it will take a number of years to demonstrate whether the drainage canal will be an important factor in the lowering of lake levels.

I thoroughly agree with Mr. Firth's proposition to advocate and secure the appointment of an International Commission of Engineers to carefully investigate and consider this entire question, making their recommendations to their respective governments, etc.

Yours truly,

T. MORFORD.

WHAT CONSTITUTES COMPLETION.

In connection with the strike at Cramps' shipyards the question has been raised as to what, under the terms of the contract for the building of Russian warships, constitutes completion. A letter has been written by the company to the Russian commission supervising the work, outlining the company's understanding, and this has been forwarded to St. Petersburg for an opinion. The company's understanding is that when a vessel has passed her speed trial, been found watertight and without structural weakness, and her guns have been tested on board, she is completed under the contract, and the company is not liable to fines for delay. Whether the Russian government will insist that the vessel must be actually finished is a question. In the Russian contracts, as in those made by the United States, there is a strike clause, but it is not known whether the Cramps will avail themselves of it.

POWER CONSUMED AT NIAGARA FALLS.

Following is a statement of the horse-power consumed by the various industries now using electrical power from Niagara Falls: International Paper Co., 7,200; Pittsburg Reduction Co. (aluminum), 3,050; Carborundum Co., 1,000; Buffalo and Niagara Falls Electric Light Co., 500; Electro-Chemical Co. (peroxide of sodium), 400; Buffalo and Niagara Falls Electric Railway, 200; Niagara Falls and Suspension Bridge Railway, 250; Buffalo and Lockport Electric Railway, 350; Oldbury Electro-Chemical Co., 1,000; Mathieson Alkali Works, 2,000; Cataract Power and Conduit Co. (Buffalo), 8,000; Tonawanda Power Co., 500; Union Carbide (of Calcium) Co., 10,000; Surface Coating Co. (enameling), 20; Niagara Development Co. (workmen's dwellings), 75; Niagara Water Works, 45; total, 34,590 horse-power.

To these additions are to be made this month, and two new works, the Atchison Graphite Co. and the Lead Reduction Co. (Litharge), will be supplied, bringing the total up to 45,190 horse-power contracted for bringing in an income of over \$750,000. The operating expenses do not exceed \$150,000 per annum.

TO REACH THE NORTH POLE.

Dr. Nansen, the Arctic explorer who came the nearest to reaching the North Pole, has expressed an opinion as to the outcome of the present and future polar expeditions.

He said they would doubtless increase the sum of human knowledge, but he did not believe the poles would be reached in the present state of human capacity, equipment and technical means, all of which are wholly imperfect.

The Arctic explorer added that the poles will probably not be reached even if international co-operation is practically and systematically carried out, as looks likely as the result of the present Geographical Congress. He was asked whether he would go on another polar expedition and he threw up his hands and laughingly shouted "No!" Then he added musingly in his peculiar English; "Unless special circumstances arise."

THE COAL CONSUMPTION OF THE OCEANIC.

The White Star Line steamer Oceanic has been the all-absorbing marine engineering topic of the month. But a realization of what the 28,000 horse-power of the big ship actually represents has come to only a few. Taking into account the steam used by the host auxiliary engines and pumps on board of such a vessel, and that used for heating purposes, it is probably not far out of the way to make a total allowance of 18 lbs. of steam per hour for each horse-power of the main engines. This would mean that 252 tons of steam per hour would be necessary to keep things going, and that, therefore, the same number of tons of water would have to be evaporated in the boilers during the same time. For a 24-hour run the amount of steam consumed would be a little over 6,000 tons, and on the liberal basis of a boiler performance of 10 pounds of water evaporated for every pound of coal burned, this would mean a daily coal consumption of at least 600 tons. It is expected of the Oceanic that she will preserve a clock-like regularity in her trips, be the weather calm or boisterous, and as one Wednesday will witness her departure one side of the Atlantic, so the following Wednesday morning should see her arrival on the opposite side. To accomplish this in fair weather would require less power than the ship has; the balance is to be a reserve, available should occasion require it. For this reason the daily coal consumption will probably range below the estimated figure given above. To show how the Oceanic transcends that leviathan of earlier years, (says Cassier's Magazine), the Great Eastern, it is interesting to recall that the length of the latter was 680 feet; that the Oceanic is 704 feet. The former's light draught is 15 feet; the latter's is 22 feet. Their respective

light displacements are about 12,000 tons and 18,000 tons, and weight of hull, 8,000 tons and 12,500 tons, and when voyaging, it is estimated that the Oceanic weighs about 28,000 tons, against the Great Eastern's 25,000 tons. It has become customary in latter years to look upon the Great Eastern as a monument of extravagance as regards size, and as physically and financially beyond proper control; and yet in the Oceanic the world has a vessel whose figures altogether overshadow those others and whose success is practically assured. But the first was an adventure on theory, while the second represents enterprise boldly advancing on experience.

FUTURE OF STEAM NAVIGATION.

Sir William White, Chief Constructor for the British Navy, as president of the Mechanical Section of the British Association, at Dover, summarized the progress made in steam navigation during the last forty years, and indicated the possibilities and directions of further advance.

Comparing the Himalaya of the P. and O. Company of date 1853 with the newer Himalaya of 1893, it could be seen, said Sir William, that in forty years the length had been increased about four per cent, displacement trebled, horse power quadrupled and speed increased about fifty per cent. Cargo steamers, no less than passenger steamers, had been equally affected. Vessels were now building for the Atlantic service to carry 12,000 or 13,000 tons dead weight, in addition to passengers, while possessing a sea speed as high as that of the swiftest mail steamers afloat in 1880.

In summarizing the distinctive features of torpedo vessel design, Sir William remarked that no one had yet proposed to extend the torpedo vessel system to seagoing ships of large dimensions, and yet it was unquestionable that in many ways and particularly in regard to machinery design, the construction of torpedo vessels had greatly influenced that of larger ships.

Past experience in respect of the total resistance and the friction resistance of a moving vessel was against the possibilities of much greater increase of speed, to the extent, at any rate, of the sanguine schemes of fifty to sixty knots an hour. Further economies of weight compared with power were being produced by various devices, the most important being the use of higher steam pressures and greater rates of revolution, the use of rotary engines, of which Mr. Parsons' turbo-motor in that remarkable vessel the Turbinia was the leading example, the substitution of liquid fuel for coal and the use of stronger and lighter materials (as alloys of steel with nickel and alloys of aluminum) for the construction of the hulls.

"In view of what has happened," said Sir William White, "and is still happening, it is practically certain that the dimensions of steamships have not yet attained a maximum."

VESSELS PASSING DETROIT, MICH.

The following report of vessel passages is furnished through the courtesy of Postmaster F. B. Dickerson, Detroit, Mich.: Number of day passages, from 5 p. m., August 15, to 5 p. m. September 15, 1,652; night passages, 1,589; total, 3,241. After the blockade in St. Mary's river was broken, 154 vessels passed Detroit between midnight September 12 and midnight September 13.

THE buoy marked "Andree Polar Expedition," which, with an anchor attached, was found September 9, on the north coast of King Charles Island, by the master of the Norwegian cutter Martha Larsaak, was opened on Sunday, at Stockholm, in the presence of a number of experts and members of the Swedish cabinet. It was found to be the so-called North Pole buoy, which Andree had arranged to drop if he succeeded in passing the pole.



CHICAGO.

Special Correspondence to The Marine Record.

The steam barge Cleveland was raised from her bed at the bottom of the C slip and went to her dock in the lumber district.

The steamer Peerless came out of dry dock at Duluth Saturday night and starts for Chicago with a full load of freight Wednesday.

The steamer American left for Michigan City Monday night to lay up for winter. The steamer did not miss a single trip during the whole season.

John Fitzpatrick, mate of the steamer Samoa, fell into the river at Milwaukee Thursday last. He died later at the hospital. His home was in Chicago, and he has a brother sailing on the Boyce.

A cable holding one of the counter balance weights of the South Halsted street elevator bridge was broken Sunday morning, and the river above that point was blocked for traffic larger than a tug.

An advance of 50 cents a day has been ordered by the Lake Seamen's Union. Sailors on schooners are now to get \$2.75 and on barges \$2.50 a day, as the new rates go into effect at once. The old rates were \$2.25 and \$2 respectively.

There is little likelihood that the old excursion steamer Chief Justice Waite will ever again float. Her machinery and everything of value in her is being taken out. She lies on the bottom of the basin with her decks awash, but it is not believed she would hold together if she were raised.

All night runs out of Chicago, except that on Saturdays at 11:30 p. m., have been abandoned by the Graham & Morton line. The City of Milwaukee now leaves daily for St. Joseph at noon, returning leaving St. Joseph at 10:30 on the fruit trade run, which reaches Chicago in the early morning.

The tugs McCarthy and Andrew Green, which went back to search for the scows lost from the Green's tow last Thursday, returned to Mackinaw City Sunday night. They report that the scows are on the beach near Scott's Point. As soon as the weather permits the tugs will start to effect the release of the scows.

The lift bridge at Halsted street was repaired after a delay to all river traffic above that point of twenty-four hours. Five vessels were waiting below the bridge to go up and almost an equal number were trying at the same time to get down. The blockade was cleared fully a day earlier than was at first thought possible.

An advance in the salaries of all of its office force in this city has been made by the Great Lakes Towing Co. In some cases the advance equals 25 per cent. The cooks on its tugs have also had their salaries raised. They are now getting \$140 a month as against \$125 a month, the old scale. Out of this each cook must feed five men.

After October 1 the Goodrich line will be running on very nearly the regular winter schedule. The Virginia alternates with the Indiana in the night trips to Milwaukee, one making three and the other four trips each week. The day boat has been taken off the Milwaukee run, also the Sunday boat off the run to Muskegon. After October 1 the night boat to Milwaukee leaves at 8 instead of 9 p. m.

The Benton Harbor Transit Co., has filed articles of association. The capital stock is \$25,000 and the officers are: W. G. Newland, president; R. C. Brittain, general manager; Fred A. Hobbs, secretary and treasurer. The new company will operate its boats under the name of the Home line. The steamer Frank Woods was purchased outright and will be thoroughly refitted during the winter. R. C. Brittain will sail her. The boats will run between Benton Harbor and Chicago.

On account of advices from their agents in northern Michigan to the effect that large numbers of passengers desire to come to the fall festival in Chicago, the Northern Michigan Transportation Company has extended its summer schedule until Oct. 15 and will put into effect low excursion rates from northern Michigan points. These range from \$2 from Ludington and Manistee and return to \$5 from Mackinac and return. The excursion rates north, however, were discontinued Saturday night last and regular winter rates now prevail.

Deals in vessel property aggregating nearly \$2,000,000 were begun by this week's transfers. Negotiations are nearly closed for the transfer of the steamer W. R. Linn and the schooner Carrington to a Cleveland corporation. The W. R. Linn was built last year at South Chicago and measures 400 feet keel and 48 feet beam, with a carrying capacity of more than 6,000 tons. When built she was the largest boat on the lakes, but has since been succeeded by the 500-footers. The schooner Carrington was built the year before on a keel 352 feet long and beam of 44 feet.

The steamer Bon Ami, of the Chicago, Saugatuck and Douglas line, has been sold to W. H. Singer, of Duluth, and will leave for the head of Lake Superior at the end of her present run. The steamer Saugatuck, of the same line, which was laid up for the winter, will take the Bon Ami's schedule for the remainder of the season. Negotiations for the Bon Ami have been pending for several days. She will be replaced on the Chicago-Saugatuck run next season by a larger and speedier boat.

There is no let-up to the crush of package freight on the various lake lines. All of them are crowded to their utmost capacity, and are making special efforts to take care of the business offered. The steamer Petoskey, of the Hart Steamship Co. of Green Bay, has been chartered by the Lake Michigan and Lake Superior Transportation Co. for a single trip to Duluth to help relieve the package freight that is crowding in and must be moved before the close of the season. Local warehouses of the boat lines carrying package freight out of Chicago continue filled to their capacity daily, though they are all cleaned up each night.

Steamboating on shallow rivers describes the satisfactory performance of a type specially designed for the swift, shallow waters of most Latin American countries—the Feliz, a 36-foot steel boat whose draft, light, is eight inches, and with five tons load is but fifteen inches, being chosen for illustration. The specifications of the steam yacht Venture, a 51-foot boat, are no less interesting. Steam yacht No. 70, compound surface condensing, with electric light, is also and deservedly chosen for illustration; this yacht can be delivered economically, under her own steam, to any port on the Great Lakes, the Mississippi river or its tributaries, or to points on the Gulf of Mexico. The well-known builders, the Marine Iron Works, of Chicago, may be addressed.

The big steamer S. S. Curry, which stuck on the Washington street tunnel Wednesday evening, got away last Thursday afternoon after lying on the tunnel top twenty-four hours. The boat was drawing only 16 feet 8 inches aft and 16 feet forward. Under ordinary conditions the boat would have cleared the tunnel easily, but owing to the south-west gale of Wednesday afternoon and night the water had been drawn out of the river to such an extent that the level was reduced fully a foot from an average depth. With a return of a portion of the water the boat slipped off the tunnel without assistance. It was thought for a few minutes that she would again be held up at the LaSalle street tunnel, but fortunately she only dragged there and was gotten off in less than fifteen minutes.

In the handling of the passenger steamer City of Traverse, of the Lake Michigan and Lake Superior Transportation Co., in the gale on Lake Superior last Wednesday was shown a bit of good seamanship that reflects considerable credit on the courage, ability and resource of navigators of the Great Lakes. The City of Traverse was fifteen miles east of Bayfield, Wis., entirely out of the reach of help of any sort, when the rudder and stock were carried away. Though the damage put the vessel immediately at the mercy of the elements, the captain did not for a minute lose sight of his duty, and lost no time in rigging a "jury" rudder out of two of the vessel's fenders. Despite the storm, which many a vessel could not have ridden out had they been in the best of condition, the vessel was brought into Pike's Bay before nightfall. She was towed into Duluth Saturday.

On Monday there was an excellent demand for vessel room on 'change, and charters for 350,000 bushels corn were made. In view of the large cash sales closed, there is every prospect that there will be a further call for vessels to-day. By the withdrawal of all the vessels of the A2 class from the grain trade because of the advance in freight rates, quite a quantity of freight room has been taken out of the market. Despite this there is no disposition on the part of the vessel owners to make up rates. On the other hand they have also taught the shippers that there is to be no haggling over freights, as they can easily find cargoes for their boats elsewhere whenever the grain men refuse to come up to the market. With a big continuation of the accumulation of corn, such as this market has during the last week—2,410,000 bushels—it is probable that the corn shippers will be in the market for vessels during the rest of the season.

The number of vessels arrived at Chicago is about three-fourths of what it was 20 years ago, and an inspection of the arrivals alone would give the impression that the lake port was declining in marine trade. But the tonnage of the arrivals are nearly doubled. The explanation lies in the rapid increase in the size of the vessels. In 1879 the average size of vessels arriving in the port of Chicago was 326 tons; in 1889 it was just under 500 tons; in 1893 it was 623 tons. Since then there has been a remarkable construction of large vessels, and though many of the smaller and older vessels are still in service the average size last year was 801 tons. As the older vessels disappear from service this average must increase rapidly, for a great part of the new vessels and most of the current construction are of heavy tonnage. During these 20 years the ratio of Chicago arrivals to the total tonnage passing Detroit varied little, but the development of Lake Superior trade, due to the opening up of the new iron ore district and the improvement of the St. Mary's canal, has been enormous. Twenty years ago the tonnage through the St. Mary's Falls canal was less than half the tonnage arrived at Chicago; last year it was more than twice as great.

Since the line of the Canada Atlantic, tapping the Great Lakes at Parry Sound, on Georgian Bay, was opened for traffic and the lake line was established two years ago, the Canadian route by way of the Welland canal and St. Law-

rence river has been the most serious sufferer. The Dominion Government has hurried the completion of the canal around the rapids of the St. Lawrence to give a uniform depth of fourteen feet from Lake Erie to deep water on the St. Lawrence, in order to meet the competition of the new route. It is regarded by marine men as somewhat strange that the very year which witnessed the completion of the twenty years of work by the Canadian Government in making this channel should also see the most dangerous competitor of the long water route enter the field with an increased fleet and greatly improved facilities. So serious has been the competition of the Georgian Bay route the last season, that outside of the grain shipped on the Ogdensburg boats, not a grain cargo has cleared from Chicago for Lake Ontario for months. By July 1, 1900, the Canada Atlantic extension to Quebec will be finished, and large freight-houses and elevators will be constructed at that point, for shipment of western grain and merchandise. A line of ocean steamers, with its terminus at Quebec, will be put in operation by the Canada Atlantic people at the same time. The lake line is but a link in the new transportation system which will give the West a new port at Quebec. The Montreal connections, of course, will be maintained, but a good share of the foreign business of the line will be handled at Quebec.

Two high-class modern steel steamers, the Arthur Orr and the George N. Orr, were bought Saturday by the Canada Atlantic Railway. The boats will replace a portion of the fleet of five vessels which the railway company had chartered of M. A. Hanna & Co., of Cleveland, and which the latter firm sold some time ago to the Bessemer Steamship Co. The price paid for the two vessels is reported by the sellers at about \$450,000. The Canada Atlantic is negotiating for three additional vessels which will run the total cost of its fleet up to \$1,250,000 and increases its capacity 30 per cent. over that of the Hanna boats, which must be surrendered next spring. Capt. C. W. Elphicke, Chicago trustee of the Great Lakes Towing Co., conducted the sale of the vessels for a syndicate of which Mr. Elphicke, Arthur Orr and Carrington, Hannah & Co. are members. The steamer Arthur Orr was built just before the world's fair, and ran as a passenger boat between Van Buren street and Jackson Park. She was afterward turned into a general freighter, and for three or four years was with the Lackawanna line. She was stranded on the north shore of Lake Superior last fall and was at first thought to be a total loss. Nevertheless, she was afterward taken off the rocks and sent to Superior. Here she had seventy feet added to her length and was made as good as new. The George N. Orr was built in 1895, also at the Chicago Ship Building Co.'s yards at South Chicago, and is 326 feet keel and 42 feet beam. The two steamers now carry about equal loads of 4,500 tons each. Their grain capacity is between 160,000 and 180,000 bushels of corn each, and they are as large as can now navigate the Chicago river. The Arthur Orr is to be delivered to her new owners on Lake Erie to-morrow, and the George N. Orr will be delivered Nov. 1. These vessels, with the Canada Atlantic additional purchases, will be at once put into the Georgian Bay trade.

A dispatch from Milwaukee says: "The Huron Transportation Co., operating the steamers City of Fremont and Flint and Pere Marquette No. 1 between Chicago and Milwaukee, was purchased Friday by Barry Bros., the Chicago tugmen, who recently sold out to the trust. The Barrys take possession of the line and will operate it hereafter. F. H. Holbrook, of Chicago, will probably be the new manager of the company, with headquarters at Milwaukee. Negotiations were conducted so quietly that no one knew of the sale until ex-Alderman Miles E. Barry made the announcement. The price paid for the line was about \$75,000. It was organized by Gregory Huron about five years ago. He had been traffic manager of the Goodrich line for many years. The new line proved a success, particularly as a local freighter between Chicago and Milwaukee. It is believed that Barry Bros. will put the Gordon Campbell in the service. Mr. Huron retires on account of ill health." "These negotiations have been pending for about one week," said Miles E. Barry, speaking of the recent transaction. "The deal was practically consummated on Thursday, the day we took possession. The money was transferred yesterday. New corporation papers will be secured as soon as my other brothers return to the city and the name of the reorganization will be the Barry Bros. Transportation Co. It is understood that Mr. Huron refused an offer of \$122,000 from the Goodrich company a few months ago for the same line which we have now purchased. He is an old steamship manager, having been identified with the Goodrich line for about 20 years, resigning his position to organize the Huron line about five years ago. He will continue as general manager of the new company until the arrangements are in a more perfect readjustment. The agreement in the recent transaction includes all dock titles, leases and contracts existing at both ends of the route. In case of an extraordinary increase in the amount of traffic we are prepared to place the Gordon Campbell package freighter, which has been purchased from the Anchor line, of Buffalo, on the lake between Milwaukee and Chicago. She is at present plying in the coal and iron trade of Erie and Michigan. The Robert A. Packer, another freight boat is also ready for any emergency which may present itself. Our new offices will be at the O'Connor docks."

The United States Engineer Corps has recently surveyed the harbor at Port Wing, on the south side of Lake Superior opposite Two Harbors. The principal industry of the place is the manufacture of lumber.

BUFFALO.*Special Correspondence to The Marine Record.*

Capt. George Graham is the new master of the steamer H. E. Packer, taking the place of Capt. Hulligan, who was appointed master of the steamer William H. Gratwick.

Lumber shovers at North Tonawanda threaten to strike against the stevedore system in operation there. They have applied to the International Longshoremen's Union for a charter.

Machinists from Montreal are at Prescott remodeling the famous Knapp roller boat. The engine will be placed in the middle of the cylinder and a great increase in speed is looked for.

The new company which has taken over the Mills property will not only be extensively engaged in dry dock and repair work but it is also their present intention to build steel vessels and a modern plant is to be added for this purpose.

Stocks of grain in public and private elevators at Chicago increased 2,366,000 bushels last week. There are now 24,177,000 bushels as follows: Wheat 12,588,000 bushels, corn 1,019,000 bushels, oats 4,082,000 bushels, rye 321,000 bushels, barley 107,000 bushels.

B. S. Sprague, formerly purser on the steamer State of Ohio, of the Cleveland & Buffalo Transit Co., has been promoted to the position of purser on the steamer City of Buffalo, to take effect October 1st. The vacancy is caused by the retirement of purser C. W. Piner, who is about to engage in a manufacturing business in this city. Both men have been connected with the C. & B. line for several years.

Like at all other lake ports, there is a constant grumbling here at the lack of dredging in the river and harbor. It does seem as if city councils should vote funds enough to do all necessary dredging demanded by the commerce of this or any other port. The impression is quite prevalent that Uncle Sam attends to all dredging, but this is not quite correct, as the federal government never works inside the harbor limits, each locality must care for its internal waterway.

The local district assembly of the International Longshoremen's Association has voted to withdraw from the United Trades and Labor Council. The trouble seems to have been caused by the attitude of the United Trades and Labor Council in regard to the marine and stationary engineers, some of whom are organized as local No. 17, and who are affiliated with the International Longshoremen's Association. It is said that at its last meeting the United Trades and Labor Council refused to honor the credentials of the delegates chosen to represent local No. 17 in the trades council and that admission to the meeting was refused them. The dock workers number about 7,000 men.

Erie canal statistics show that 2,536 boats have cleared from this port since the opening of the navigation season, of which number 445 cleared during the month of September. The boats carried to eastern ports along the canal, during September, 1,252,474 bushels wheat, 272,479 bushels corn, 429,930 bushels oats, 165,431 bushels barley, 940,016 bushels flaxseed, 2,659,427 feet of lumber, 1,486,655 pounds of oil meal, 6,903,440 pounds pig iron, and 3,400,000 pounds general merchandise. A very large quantity of various commodities was delivered here by incoming boats from the east. Compared with last year there was a decrease in grain shipments of nearly 4,000,000 bushels.

The sale of the single deck steamer Viking was effected through the agency of Drake & Maytham. A Philadelphia firm which receives large quantities of southern pine lumber from Charleston, S. C., is the purchaser. No mention is made of the price paid for the steamer. She will make one more trip to Duluth before being transferred to the Atlantic coast. Capt. Harry Richardson, who brought the craft out, will go as master. He is an old salt water navigator. The Viking was built at Buffalo by the Union Dry Dock Co. in 1889 for Gilchrist & Co., of Alpena, at a cost of about \$95,000. Her net measurement is 944 tons. Gilchrist & Co. deny the report of the sale from Alpena.

The Mills Dry Dock property was sold this week to the recently organized Buffalo Dry Dock Company, the consideration being in the neighborhood of \$350,000. The new company took possession at once and will carry on the business. In the near future several changes and improvements will be made in the property. The officers of the Buffalo Dry Dock Company are as follows: President, Edward Smith; vice-president, James Ash; secretary and treasurer, Abner C. Adams; general manager, Capt. Johnson, all of Buffalo; directors, C. H. Donaldson, of Buffalo, R. R. Rhodes, of Cleveland, E. D. Carter, of Chicago, William A. Prime, of New York, James Ash, of Buffalo, Edward Smith, of Buffalo, and Abner C. Adams, of Buffalo. In the prospectus of the company the capital stock is stated to be \$575,000. A meeting of the directors will be held next week, at which the proposed improvements of the property and other matters of interest will be discussed.

Considerable curiosity has been aroused by the departure of three Erie canalboats from Buffalo for Chicago. The names of the purchasers were withheld, as well as the business in which the boats were to engage. It is stated on good authority that the boats are for the Chicago Railway Terminal Elevator Co., and will be used in transferring grain between the various elevators on the Chicago river. The grain transfer Dewey was recently bought by the same company from Capt. Louis Holman. The Dewey has a good schooner hull and can be towed in the lake. It is stated

that the company will use the Dewey and perhaps another boat of the same kind to carry grain from Milwaukee, South Chicago, Manitowoc and Green Bay to the Chicago river. The canal boats being towed up the lake now were bought in Buffalo for the reason that this was the nearest point where canal craft good enough to load grain could be found. The transfer business will in all likelihood be used to a much greater extent than ever before. The Buffalo canalers were towed to Port Huron by the tug Fabian, which was relieved there by the Boynton, to finish the trip.

In connection with the release of the steamer Harlem from Isle Royale it is stated that the wreckers found their work possible only because of one strange thing. Last fall pumps could not lower the water in the hold at all, and early this year stuff from the cargo was constantly being sucked up only to clog and stop them. But a large part of the cargo in the hold consisted of cement, and as the barrels became broken through the heaving of the steamer this cement gradually worked its way into the holes where the rivets had been sheared off and stopped the inflow of water. Then, too, as the pumping capacity was increased and the water would be lowered somewhat pegs were whittled and driven into all the rivet holes that could be reached, and in this way it finally became possible to pump her out. The weather moderated so that the pumps could be started last week Wednesday. In a little over two hours the Harlem was afloat, and by 11 o'clock she was safe on the sand in Little Siskowit Bay, with her bow in six feet of water. As soon as the Harlem is in shape to stand the trip and the weather will permit, she will be taken to West Superior to be repaired, and it is understood to be the intention of her new owners to lengthen her fifty feet in the midship section.

CLEVELAND.*Special Correspondence to The Marine Record.*

White, Rider & Frost, of Tonawanda, are the purchasers of the steamer Ed. Smith No. 1. The price paid is \$40,000.

Purser C. W. Piner, who recently severed his connection with the Cleveland & Buffalo Transit Co., was presented with a gold watch and chain by the employes of the company.

An effort will be made on Thursday to raise the tug W. D. Cushing that sunk in the river on Monday night. She will be pumped out and raised, and then sent to the dry dock to be calked.

Capt. George Graham is now master of the steamer H. E. Packer, taking the place of Capt. Hulligan, who was appointed master of the steamer William H. Gratwick by Drake & Maytham.

At a meeting of the executive committee of the Lake Carriers' Association, held on Friday last, a resolution was adopted requesting the Light-House Board to make necessary provisions for maintaining the lights, marks, beacons, etc., until as late as December 10.

The steamer City of Buffalo, of the Cleveland & Buffalo Transit Co., made a fast run to and from Lorain Wednesday afternoon. The trip was made in less than an hour and a half, and the distance is considered something over 30 miles. The only better run known of is that by the City of Erie of the same company, last fall, when she went to Lorain to lay up for the winter. She made the trip in one hour and 12 minutes.

J. H. Andrews, of southern Florida, claims to be the oldest lake captain. He sailed the lakes in a brig as master more than fifty years ago. Capt. Andrews claims that in 1853 he brought the first cargo of iron ore to Cleveland from the mines of Lake Superior, and that he was master of the first upbound sailing craft that went through the "Soo" canal. The first load of iron ore the captain carried in his brig weighed 300 tons.

Notwithstanding the report published some time ago to the effect that the major portion of the coal business of the W. & L. E. Railway Co., at Huron, O., would, upon the adjustment of the company's affairs under the new management, be taken to Cleveland, it is learned that plans for a new slip at Huron are now under way. The proposed slip will be 1,000 feet in length by 200 feet in width, and the docks surrounding this will be used exclusively for handling ore, and will be equipped with twelve conveyors of the latest improved design.

The Bessemer Steamship Co. has been granted permission by the Commissioner of Navigation to change the name of the steamer Globe, to James B. Eads. It is the custom of the Bessemer Steamship Co. to name their boats after prominent iron men, investors and other. These names are selected of men that have passed away. James B. Eads was an eminent civil engineer, who first acquired fame from the construction of the St. Louis bridge across the Mississippi river, and later through the construction of the piers at the mouth of the Mississippi river, which were the first to ever hold the Mississippi bar.

The Cleveland & Buffalo Transit Co. has made its regular fall reduction in rates, which are given to induce travel. The rates are \$2 one way to Buffalo and \$3.50 for the round trip. This is a reduction of fifty cents on the one-way fare, and \$1 on the round trip. The company has decided to give two excursions to Niagara Falls that are extraordinary as far as the rates are concerned. These will be the annual low rate trips given by the company to its patrons. The first will be on Saturday evening, Oct. 7, and the second will be one week later. The charges are \$1 to Buffalo and return and to Niagara Falls \$1.50 and return.

James Davis claims to be the oldest sailor on the lakes now in active service. He was born in Wales on March 3, 1823, and came to this country when 12 years of age and begun sailing on the lakes with his brother, who was captain of the schooner Citizen, hailing from Erie, Pa. Davis has sailed from that day to this, a period of 64 years. He has had a master's license for steamboats for 33 years and has never had any bad shipwreck or other disaster. The old man is hale and hearty as a usual thing and expects to continue in the service for some years to come. He has one son, the captain of the steamer Ohio, of Cleveland.

When Capt. James Davidson was in Toledo this week he talked to the Blade reporter as follows, asked his opinion of the outlook for next season's vessel trade: Capt. Davidson said that all conditions point to a prosperous season. There is plenty of employment for all who seek it, and plenty of money in the hands of men who are ready to spend it in business. Referring to his yards in Bay City, the captain said that a tremendous amount of repair work had been done this year, the last turned out being the big steamer Tampa. She is to-day practically as good as new. A large amount of new as well as repair work is contracted for. We shall build two new vessels the coming winter and perhaps more. A large tug will be finished for the Great Lakes Towing Co. in about two weeks. She is fitted for ice breaking. She is a powerful tug, and will make a good business craft. The Great Lakes Towing Co. is moving along in a satisfactory way. We are locating tugs at points to give good service. We have had so much to do that we have not taken up the matter of Toledo tug property. We now own practically all the tugs at different points on the lakes, excepting Toledo and Milwaukee. We shall probably not do very much toward buying more tugs until after the close of navigation. Capt. Davidson owns 22 of the largest carriers on the lakes. He did own 29, but he sold seven of them, namely: The Chickamauga, Chattanooga, Appomattox, Santiago, Phoenix, George B. Owen and Typhoon.

DULUTH-SUPERIOR.*Special Correspondence to The Marine Record.*

A general strike, affecting all freight and flour handlers in West Superior, was ordered by the longshoremen's union on Wednesday. Five hundred men are out and no boats are being loaded. The men demand that none but union men be hired. The strike has not spread, as yet, to Duluth. The managers of the Northern Steamship Co. refuse to recognize the union. Duluth freight handlers will not unload any of the Northern boats consigned to Superior.

The situation at the head of Lake Superior is beginning to shape itself for the coming winter. One railroad running into the Gogebic range has been solicited to make figures for the shipment of 300,000 tons in one lot of ore to furnaces of either the valleys or Pittsburg the coming winter. The figures have been made and are satisfactory, and the deal is about closed. This road will bring its cars back coal-landed, the expected scarcity of fuel in the northwest offering a favorable inducement for return freights. The rate is private, but it is understood that it is but little if any higher than the present ruling lake and rail rates to the same destination. Other roads have been approached for similar shipments from old range mines, and there is a possibility that the Minnesota range will ship some ore that way, at least as far as Chicago.

The ore docks at the head of the lakes shipped in September 1,057,888 gross tons as compared with 1,468,412 tons for the record breaking month of August. The falling off in the volume of ore shipments for the past month was somewhat greater than had been expected, but there seems to be no chance for a shortage of ore at the end of the season. The certainty of sending forward fully 16,000,000 tons this season from the Lake Superior region appears brighter than ever before. The total shipments of iron ore from the Lake Superior region to September 1 amounted to 10,646,913 tons. Allowing that the iron ore shipments from the Lake Superior region for September were not to exceed 2,500,000 tons, or even 2,000,000 tons, and there would appear to be no difficulty in reaching the 16,000,000 ton mark. From the best statistics available it appears that the Lake Superior ore movement to October 1 has amounted to 13,000,000 tons. During the month of October and November it is plain that 3,000,000 tons more may be sent forward without difficulty, making the total shipments for the season 16,000,000 tons. Observers of the ore situation now say there is no chance of the shipments falling below that figure, for the amount required to equal that total can be easily shipped and there is a demand for it all. The Duluth & Iron Range docks at Two Harbors shipped 517,000 tons in September as compared with 337,017 tons during the same month in 1898. These docks shipped altogether this year to October 1, 2,845,467 tons as compared with 2,121,719 tons for the same period last year. The Duluth, Missabe & Northern docks in September this year shipped 419,594 tons as compared with 460,706 tons for the same month last year. These docks had shipped to October 1 this year 2,386,720 tons as compared with 2,117,348 tons last year to the same date. The eastern Minnesota dock on Allouez bay shipped 121,294 tons in September and the shipments this year to October 1 from that dock have amounted to 690,319 tons, an increase of 330,000 tons over the same period last year. The aggregate shipments of iron ore from Duluth, Two Harbors and Superior to October 1 this year have been 5,922,405 tons for the same period last year, a gain of 886,101 tons. Nearly half of the ore that has gone forward from the Lake Superior region is Minnesota product.

WATER TEMPERATURES OF THE GREAT LAKES.

BY NORMAN B. CONGER, LOCAL FORECAST OFFICIAL, AND MARINE AGENT.

The study of the distribution of fog on the Great Lakes, which has now been carried on for upward of two seasons, shows among other things the importance of a knowledge of the temperature of the surface water. In 1892, 1893, and 1894 the Weather Bureau collected observations of water temperatures made by masters of vessels plying between lake ports, and in the last named year the writer was one of a small party that visited Lake Superior and made many surface observations and also a number of observations at depths of 10, 20, and 100 feet. A brief statement of the results of these observations is here given.

Lake Superior.—The lake closes to navigation with the closing of the St. Mary's canal about December 1, but ice rarely forms in the open lake before the beginning of January. In some of the harbors it does not form much before February 1. Ice on the open lake may form to a thickness of from 1 to 4 feet; it is frequently piled up, however, to a much greater depth. The ice in the open lake breaks up in April and is drifted about by the winds until it finally disappears. The water temperatures in May in shallow bays average about 40°, being slightly warmer at the western end of the lakes than along the shore from Marquette eastward. In the middle of the month the average temperature of the water over the great body of the lake is about 37°, being slightly lower in a few localities. In June the temperature of the surface water along shore, where the depth is not great, averages from 48° to 54°, being, as before stated, warmest at the western end of the lake. The temperature is lower toward the deeper parts of the lake, reaching a minimum of 37° in midlake, but the area of 37° is less than during the preceding month. In July the temperature of the surface water in midlake has risen to 40°, while shore temperatures have risen to 60° and over in some of the shallower bays. The difference between the temperature of the water in midlake and along shore is greatest in July and August, viz., 20° and upward. In August the area over which water temperatures of 40° may be found is less than for July and can be found only in the center of the lake. The influence of the warmer air temperatures of June and July is now felt in the general warming up of the waters. Large areas show an increase in temperature from the month preceding, of about 10°. The maximum temperature of the water in the great body of the lake occurs in September, about a month after the highest air temperature. It is to be noticed, however, that the temperature of the water along shore has begun to fall, the maximum of the year being registered in August. During October the temperature of the water falls from 5° to 10° over the great body of the lake. Shore temperatures range from 45° to 50°, decreasing from those amounts to about 40° in deep water. In November the temperature of the water around the shore and in deep bays is about 40°, diminishing to 37° in midlake.

We have thus seen that the surface temperature of the water along shore and in the larger bays, increases from 32° in winter to about 60° in August, a total range of 28°. In midlake the increase is very much less, from 32° to 40° or 45°, certainly not more than half of what it is for shore waters.

Lake Michigan.—The observations for the remaining lakes are not sufficiently numerous to discuss the months in detail; our remarks will apply to July only. The coldest portion of Lake Michigan is found in the center of the northern two-thirds where the mean temperature for July is 55° or less, but above 50°. Surrounding this area of relatively cool water is a region of warmer water, 60°, broken only in the northwest, where the temperature of the water is about 55°. The temperature of the northeastern part of the lake is between 60° and 65°. The warmest part of the lake, as might be expected, is around the southern end, when mean temperatures above 65° may be found.

Masters of vessels occasionally report low water temperatures in summer off the Michigan coast, in the vicinity of Grand Haven and Muskegon. Additional observations are required before we are justified in assigning an abnormally cold area to this locality.

Lake Huron.—The observations on this lake are naturally confined to the west shore. The temperature of the water in July is about 65° from near Thunder Bay Island southward to near Port Huron. Colder water may be found in bands extending southeastward from the east and west ends of Drummond Island. The differences between the water temperatures along shore and some distance out in the lake

are not so great as in the case of Lake Superior, nor are the differences between water and air temperatures so well marked. In July at Mackinaw the average temperature of water at the surface in a depth of about 11 feet was 63°; the average temperature at the bottom was 62°, while for the same time the average temperature of the air was 69° (average of four years).

In the Detroit river the average surface temperature for July in water 24 feet deep, was 69.7°; at the bottom 69.6°, while the air temperature for the same time was 77.7°, a difference of 8°. Probably the difference between water and air temperatures over Lakes Michigan and Huron is not more than 7°.

Lake Erie.—The temperature of the water in this lake approaches more closely to the temperature of the air than is the case on any other lake. Generally the mean water temperatures range between 70° and 75°.

ASTRONOMICAL NOTES.

Astronomical data for October, 1899, furnished to the MARINE RECORD by the Washburn observatory:

All the bright planets, Mercury, Venus, Mars, Jupiter, and Saturn are at present gathered together in the same quarter of the heavens. They may all be seen in the southwestern sky in the early evening, under good conditions of the atmosphere; but Saturn is the only one far enough from the sun to be conspicuous during the present month. On October 11, Mars may be seen close by Jupiter, a little north of the latter; on October 24, Mercury will be similarly situated, and on October 29, Venus will pass by Jupiter on the south, still nearer than the previous planets.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
Oct. 1.....	5:49	5:34
" 11.....	6:00	5:16
" 21.....	6:12	4:59
" 31.....	6:25	4:45

The times of the moon's phases are:

New moon.....	Oct. 4, 1:14 p. m.
First Quarter.....	" 12, 12:10 a. m.
Full moon.....	" 18, 4:05 p. m.
Third Quarter.....	" 26, 3:40 a. m.

The principal fixed stars visible during the month are: In the evening, to the west, Vega; Altair, near the meridian; the bright stars of the square of Pegasus to the east; Aldebaran, the Pleiades, Capella, and the bright stars of the constellations, Cassiopeia and Andromeda.

EASTERN FREIGHTS.

The course of our freight market, as developed in the week now under review, presents no material change. A few charters have been made of large grain tonnage for prompt shipment, but the inquiry is light for vessels to load before the middle of October. Some demand has developed for steamers for Spring loading, especially for Denmark, and the demand does not appear satisfied by charters reported at foot. The situation in respect to timber and cotton remains unchanged; charterers for the latter commodity are apparently unwilling to take further tonnage until cotton begins moving more freely. In time charters the principal item of interest is a further fixture for the Pacific trade, at a figure considerably in excess of what would be obtainable for business from this coast.

There are absolutely no new developments in the market for sail tonnage to influence rates in any direction. Quotations generally, especially for long voyage business, still favor the vessel.

LIQUID FUEL.

The output of liquid fuel, or masut, and of petroleum by-products has now become the mainstay of the petroleum industry in Russia. The annual quantity of masut consumed amounts to no less than 500,000,000 poods, which, with the extension of the railways, is expected to further increase to a large extent. Not only in the firing of locomotive boilers liquid fuel is playing an important part, but also in connection with the raising of steam in marine boilers. As a preliminary all the war vessels belonging to the Baltic fleet are now fired with liquid fuel, and it is believed the whole of the Russian Imperial Navy will eventually be converted to the system, according to a gradual process of transformation. The industry is at present hampered through lack of a sufficient number of tank steamers.

THE STEAM TURBINE.

In the course of his paper on the "Steam Turbine System," read before the British Association meeting at Dover on the 15th, the Hon. C. A. Parsons, F. R. S., said that for fast passenger vessels, and especially for cross-channel service, the turbine system of propulsion offers great and important advantages over the ordinary screw or paddle engines. In the first place, the steam consumption of the turbine engines is no more—perhaps somewhat less—than the best ordinary triple compound engines. Then the weight of engines, shafting and propellers is under one-half that of ordinary paddle engines of the same power, so that there is much less weight to be propelled; besides this, the hull itself may be of lighter structure than is admissible with ordinary engines owing to the absence of racking stresses from the machinery. With turbine engines no lubricant enters the steam part, so that express water-tube boilers of the smaller tube type may be maintained in satisfactory working condition for long periods. But, perhaps, the most important considerations are the increased comfort to passengers, owing to the absence of vibration and a remarkable smoothness of motion analogous to that of a sailing vessel, also the greater depth at which the propellers are placed below the surface of the water, reducing the liability to racing of the engines, which enables the speed of the ship to be maintained in heavy weather in a way that is totally impossible in the case of ordinary screw or paddle vessels. The particulars of the proposed 30-knot turbine boats are as follows: Length, 275 feet; beam, 30 feet; depth (molded), 13 feet 1 inch to main deck; 21 feet to awning deck; draught 9 feet 3 inches (about); displacement, 1,000 tons (about); speed, 30 knots; i. h. p., 18,000. It is estimated from the results so far attained with the Turbinia and the torpedo-boat destroyer that the coal consumption at the full speed of 30 knots will not exceed 2 pounds per i. h. p., a result superior to that obtainable with triple-expansion engines. Designs have also been prepared for other vessels of larger dimensions, including an express channel steamer of 1,600 tons displacement, 10 feet 9 inches (about) draught, 50,000 i. h. p., and a speed of 40 knots. A model of a proposed Atlantic liner was also shown, the dimensions being: Length, 600 feet; breadth, 63 feet; depth, 42 feet; displacement, 18,000 tons. The i. h. p. is 38,000 and her speed 26 knots. In conclusion the speaker said: "There appears to be an impression amongst some engineers that steam turbine machinery deteriorates. It may be stated, however, that its endurance appears to be beyond question. On many occasions engines have been run continuously for three weeks, and after some years of work there is found to be practically no erosion by the steam on the blades. In conclusion, it would seem that the very great and unquestionable advantages to be derived from the adoption of the steam turbine system of propulsion for all fast passenger and cross-channel vessels will soon lead to the commencement of its general application, both in this and other countries, to this service."

OCTOBER LAKE STORMS.

BY ALFRED J. HENRY, CHIEF OF DIVISION.

There is an increase both in the number and violence of lake storms in October, as compared with September. The squall winds and thunderstorms of the warm season gradually cease, being replaced by a different class of storms, some of which sweep over large areas and develop very great violence. October storms are generally preceded in the lake region by higher temperature, increasing cloudiness, and moderately high winds from some easterly or southerly quarter, which blow steadily as compared with the squall winds of summer.

The greater number of October storms pass over the northern or Superior route. The number that move northeasterly from the central valleys, however, is greater than during the preceding month and storms from this quarter are more apt to be accompanied by high winds and gales than those which pass over the Superior route.

Notice of the approach and force of storms is given by a system of signals. In addition to the display of signal flags a telegram is sent daily to each displayman, advising him of the weather conditions, and in the case of threatening weather, of the location and expected movement of the storm center.

Masters of vessels flying the American flag, when in port where there is no Weather Bureau office or display station, can obtain information of the expected weather conditions by telegraphing to the Weather Bureau Office in Chicago or Buffalo.

ENGINEERS OF THE UNITED STATES NAVY.

The recent report of Engineer-in-Chief Geo. W. Melville, United States Navy, says the Liverpool Journal of Commerce, deals more especially with the vexed question of water-tube boilers, the utility of liquid fuel, and the personnel of that branch of the naval service of which he is the distinguished chief. We propose to deal with the personnel of the engine room in few words; although too much attention cannot be devoted to this item, so important in naval warfare of the future now, that mastless monstrosities are simply huge boxes choke full of complicated machinery. Long ago, in the days of short sailing warships, sailors took fighting craft into action, and manœuvred them during engagement, while soldiers did the necessary business with sword and gun. Now the marine engineer is entrusted with the control of the motive power. Consequently, everything tending towards improvement in engine room or stokehold serves to make victory more certain for the nation paying the greatest attention to this particular department. Adequate numbers, and a status commensurate with the responsibility devolving upon them, are put forward by Engineer-in-Chief Melville as required in order to foster the highest efficiency of any organization. Neither of these is fulfilled so far as the engine room staff of the United States Navy is concerned. He recommends an increase in all grades of engineers from 195 to 300; and the conferring of actual rank and titles, as is the case for staff officers of the army. Our near kin are continually adding splendid warships, fitted with most modern machinery, to their new war navy. The old wooden ships, which often raised a smile for officers of other navies, are gradually disappearing. Some are turned into drill ships for naval volunteers, others are awaiting orders. Yet, despite the radical revolution in the class of ship, and the evidently increased demand for skilled engineers to get the full return for money from the engines, the number of engineers seems scarcely to have increased since 1882. The British Royal Navy is not nearly enough provided with engineers. It has been calculated that we should require about 230 more engineers if a war were suddenly declared. Probably the creation of engine room warrant officers from the ranks of our engine room artificers will assist in inducing mechanics to enter the service with that desirable goal in view. Gunners, boatswains, and carpenters will now be more nearly approached by the skilled artificer from the engine room upon whose reliability so much depends. Engineer officers of the Royal Navy assumed the role of prophet with considerable success under this head. Chief Inspector of Machinery C. M. Johnson, last year, on the occasion of the discussion of the naval prize essays at the Royal United Service Institution, told a brilliant service gathering that "warrant rank for engine room artificers is a concession which must be granted in the near future." His words have come true. It would be a mistake though to proceed further than this, for reasons which are obvious. A warship engineer has to go through a costly course of training, his responsibility is something enormous at times, and nothing could be more fatal to our national superiority on the high seas than to lull ourselves into the erroneous belief that commissions as engineers might be granted indiscriminately to everyone competent to manipulate an engine. Something more than this is absolutely necessary if the engine room is to remain on an equal footing with the deck. Engineer-in-Chief Melville is not far wrong when he suggests that the importance of having fully qualified engineers for the United States Navy is so overwhelming as to make it almost a question whether it would not be wiser to stop building the expensive machines of the brand new Navy until the Great Republic shall have at command a sufficient number of trained engineers to keep them in a proper state of efficiency. Absence of definite rank doubtless drives a certain number of first-class engineers out of the American Navy. Firemen are not slow to perceive just what is the matter, and act accordingly. Staff-Engineer R. W. Edwards, R. N., has well explained how the trouble arises in a great measure. The engineer of the infancy of steam had but a few men under him; while the executive branch, owing to a lingering regard for sails, had the large majority. Now an engineer has control over several men. Naturally enough the engineer who directly superintends his "black squad" learns more of their habits than the executive officer can ever hope to do under present conditions. Hence, little, if any, demonstration is required to prove that the engineer would be greatly helped in keeping up absolutely necessary discipline if his men were well aware he had the power to punish for

minor offences, and of enforcing his orders. At present an engineer officer is destitute of executive authority in his own department. Evidently both the British and the United States engineers in warships are agreed upon the extreme desirability of a change in the direction indicated. Occasionally an offender gets off because of the trouble involved in getting him the recognized punishment to fit the offence. The man has to be sent away from duty to get into clean clothes before he can go on the quarter deck, time would thus be wasted, and the engineer is tempted to let matters slide. Of course the engineer can take it out of the man by compelling him to carry out disagreeable duty, but this is illegal, and the man may exercise his right to complain. Probably in the near future the engineer officer will exercise an authority in his department which shall not be distinctly different and inferior in kind to that of the executive branch. Much more radical revolutions than this have been carried out, free from friction, since the marine engineer first found his way into a warship and ranked below a warrant officer. Engineer-in-Chief Melville urges that owing to the distinction fostered between the two branches of the service, it logically follows that if an engineer officer cannot command the men under him, his directions to them are legally only requests. Yet the absurdity of such a state of affairs is evident when it is remembered quite a quarter, sometimes nearly half, the crews of warships are under the engineer's control. British and United States engineer officers of the very highest rank in the respective war navies are agreed as to the bad effect upon discipline the knowledge of this has upon firemen. A case recently decided by the department goes to show how hard dies the feeling that grease and salt water will not mix, if we may be permitted to use this erroneous adage. Commissioned staff officers of the United States Navy were within an ace of being put under the command of an enlisted man. Evidently this was a flagrant attempt to belittle the engineer officer. It would undoubtedly be deprecated by almost all the executive officers. Still old notions survive the flight of time. Discipline is but a name under conditions like this. The engineer simply wants to be the executive officer in his own department, and to have the style and title thereof; but not in any way to interfere outside his own department. This much he will doubtless obtain before many years, in the interests of discipline, and according to the dictates of strict justice.

VISIBLE SUPPLY OF GRAIN

As compiled for THE MARINE RECORD, by George F. Stone Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	1,493,000	1,244,000	387,000	18,000	148,000
Chicago.....	8,628,000	5,393,000	1,325,000	296,000	7,000
Detroit.....	689,000	18,000	9,000	9,000	.....
Duluth.....	5,586,000	156,000	74,000	108,000	186,000
Fort William, Ont..	1,368,000	.....	.....	.....	.....
Milwaukee.....	83,000	6,000	.....	11,000	13,000
Port Arthur, Ont....	80,000	.....	.....	.....	.....
Toledo.....	2,179,000	660,000	703,000	10,000	1,000
Toronto.....	94,000	.....	3,000	.....	34,000
On Canal.....	183,000	120,000	252,000	.....	68,000
On Lakes.....	1,440,000	1,470,000	373,000	108,000	874,000
Grand Total.....	42,143,000	1,249,000	7,328,000	790,000	1,441,000
Corresponding Date, 1898.....	11,263,000	21,406,000	5,447,000	771,000	162,000
Increase.....	2,415,000	364,000	945,000	.....	559,000
Decrease.....	.....	.....	.....	51,000	.....

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

Two large steel companies will be formed in Canada—the Whitney establishment now being erected at Sidney in Nova Scotia and a second enterprise to be established at North Sydney. It seems that a deal had been made in England to merge the Nova Scotia Steel Co., of Glasgow, and the General Mining Association. The works at North Sydney will include a shipbuilding plant and a dock. The company owns iron mines on Bell Island, Newfoundland. In addition to their consumption of this ore, the company has sold 300,000 tons of it in Europe for immediate delivery. Work is to be begun at once by the construction of four hundred coke ovens, besides blasting furnaces and steel works, and the manufacture of steel on an extensive scale will be in progress within 18 months. The open-hearth process will be adopted in the making of steel, and this will be followed by the manufacture of all kinds of bridge and other structural work.

POPULAR NOTES ON ASTRONOMY.

Antares in Scorpio is now so low in the south-west that it can only be seen for a short time in the early evening, when the atmosphere is especially clear and the western horizon unobstructed.

Arcturus in Bootes is still the brightest star seen in the evening toward the north-west, and may be easily identified by following the line of direction determined by the last two stars in the handle of the Great Dipper. Vega, in Lyra, but little west of our zenith in the early evening, is the only first-magnitude star in that part of the heavens, and forms a small triangle with two fourth-magnitude stars. South-west of Vega, Altair in Aquilla may be seen, a first-magnitude star mid-way between two stars of the third and fourth magnitude respectively. Deneb, the brightest star in Cygnus, the Swan, is now near our zenith early in the evening and forms a triangle, nearly isosceles with Vega and Altair, the latter being at the vortex of the supposed equal sides. A few degrees east, Altair is a small diamond-shaped figure composed of two third, and two fourth magnitude stars, known as Delphinous, the Dolphin, but frequently referred to as "Job's Coffin." Capella in Auriga is the brightest star now visible in the north-eastern quadrant of the heavens. A line of stars extending north-east from the northern-most star in the square of Pegasus forms the outline of the constellation Andromeda, celebrated for its great nebulae, the only one visible to the unassisted eye.

The only first-magnitude star in the south-eastern quadrant of the heavens is Fomalhaut in the Southern Fish, at present quite near the horizon. In the east the well-known group of the Pleiades in Taurus may now be seen in the early evening. Following these, and included in the same constellation, are the Hyades arranged in the form of a letter V with the ruddy star Aldebaran at the end of the right arm.

The morning sky is still beautiful by reason of the presence of those brilliant constellations that are wont to adorn our winter evening sky.

Mercury will be the evening planet most of the month and may be seen for a few evenings near the middle. Venus will also be an evening planet, but will be invisible to unaided eyes, as she will be lost in the realm of continuous day.

Mars will not be easily seen this month, by reason of his apparent proximity to the sun.

Jupiter that has so long been one of the principal objects of interest and beauty in our evening sky, can now be seen only for a short time in the early evening and will soon disappear, lost in the rays of the advancing sun.

Saturn, the beautiful ringed planet, will be visible in the evening most of the month, but for the greater part of the time will be too near the horizon for satisfactory results with the telescope.

The present arrangements of the planets is quite unusual, while they are all classed as evening planets, only one is in reality accessible.

The full moon in October is known as the hunter's moon, and has the same general characteristics as the harvest moon in September, though not quite so marked. If clouds do not obtrude we may expect another series of moonlight evenings of unusual beauty. On October first the sun was three degrees and twelve minutes south of the celestial equator, and during the month he will increase that distance to fourteen degrees and twenty-seven minutes; thus rapidly is he sinking toward the south.

At the beginning of the month he will come to the meridian ten minutes ahead of time; at its close he will be more than sixteen minutes in advance of true time, so that we may without any disrespect for our central luminary say "Old Sol is not a reliable timekeeper."

September 26, a group of small spots was seen upon the sun after a period of more than fifty days without a spot, the longest time that the writer has ever known the sun to be free from spots during over twenty-five years of observation.

September 27, a second group of spots has come into view. September 30, both groups have disappeared, though only about midway in their transit of the sun, an occurrence that the writer has never observed before.

Toledo, Ohio. D. SATTERTHWAITE.

The hull of the oldest steam vessel on the Pacific coast and the second tugboat built in the United States, was made a bonfire of on the West Seattle beach to the delight of a large number of excursionists. The vessel was the Goliath, built in New York in 1848 by W. H. Webb.



ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,
Incorporated.

C. E. RUSKIN,	-	-	-	Manager.
CAPT. JOHN SWAINSON,	-	-	-	Editor.
CLEVELAND,			CHICAGO,	
Western Reserve Building.			Royal Insurance Building.	

SUBSCRIPTION.

One Copy, one year, postage paid,	-	-	\$2.00
One Copy, one year, to foreign countries,	-	-	\$3.00
Invariably in advance.			

ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office.

THE MARINE RECORD PUBLISHING CO.,
Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

CLEVELAND, O., OCTOBER 5, 1899.

DEEP WATERWAY TO THE COAST.

We cull some views from our eastern exchanges relative to the much-talked-of deep waterway to the coast. It is said that there are already indications that the east is to bitterly oppose any scheme in Congress looking toward the appropriation of money for the deep waterway to the sea from the lakes. The east realizes that with a completion of a deep waterway system, its importance as an export center will be entirely destroyed, and so the fight so far as the east is concerned, will be in the interest of a retention of its present commercial supremacy as the gateway to the continent of Europe. Recently, the Philadelphia Record, taking up the question of the deep waterway, suggested that some day the plan would undoubtedly be carried out, and stated, in an not unfriendly tone, that thereupon wheat, corn, chilled meats, lumber and other western products intended for the export trade, would be shipped from the great west to Europe by an all water route, at a great reduction in freight costs. The Record added that the scheme was not chimerical, although calling for the expenditure of about \$100,000,000, and that the idea would have a strong attraction for American capitalists, who are always attracted by large plans which have been proved to be sound in principle.

The Washington Post, sounding a note of warning, takes the Record to task, and asks if "the great city of Philadelphia, which is doing all that it can to increase its export trade, is going to favor the deep waterway scheme?" And with this question the Post goes on to say:

Is there a single Atlantic seaport or Gulf city from Boston to Galveston that would not oppose the construction of an artificial waterway that would absolutely destroy their export business in "wheat, corn, chilled meat, and other products?" Although New York is rapidly parting from this trade, the metropolis is not yet ready to promote a plan for destroying it. In the hope of checking the decline at the port of New York, the Empire State has wasted \$9,000,000 on its system of canals, and may yet conclude to carry out some plan for their improvement. It is certain that the eastern, the middle and South Atlantic States would oppose the granting of national aid to the proposed waterway. The southwest and Pacific States, the former having good facilities for shipment to Gulf ports, and the latter having the Pacific ocean for transportation to their natural markets, will join the east in opposing the scheme. And it is too large a matter for private or corporate enterprise to undertake.

The Post article seems to strike a responsive chord all over the east, and what it says is significant as indicating what the probable line of attack upon the deep waterway plan will be. If to be forewarned is to be forearmed, the west ought now to be able to plan for the contest. The east will not surrender its position as the gateway to Europe without a struggle, and folks in the west who have been thinking

otherwise should immediately revise their ideas and get ready for the worst.

The east, the middle states, with New York and Pennsylvania as a center, the south Atlantic states and the states of the Gulf, will form an adversary whose united strength will be immense; and yet, if the west had long ago adopted the policy which is so well defined in the east, of sending good men to Congress and keeping them there, it would be more nearly able at this time to cope with such an adversary. This matter of sending men to Congress has in its last analysis more to do with business than with politics, which the sooner the west learns, the better able it will be to take care of itself on matters of general legislation.

A NEW PASSENGER LINE.

It is stated that a line of passenger steamers between Chicago, Milwaukee, Cleveland, Buffalo and Ogdensburg for next season is now assured. Five large steamers of the Ogdensburg line will be converted into passenger boats during the winter and next season will make semi-weekly sailings at all of these ports. This announcement is made by Frank Owen, general freight agent of the line.

The steamers will be given passenger accommodations during the winter at Detroit. Their rates will include everything for the trip, and arrangements will be made for close connections with the St. Lawrence river lines to Montreal.

"I believe that we can count on a very large business," Mr. Owen said, "during 90 days of the year. The growth of the lake passenger business during the last few years has been wonderful, and I believe the time has come for a successful line from one end of the lakes to the other."

LAKE FREIGHTS.

Grain freights are on the improve this week $4\frac{3}{4}$ cents offered freely Duluth or Ft. William and vessels holding for a 5 cent rate, with every chance, as it now looks, of them getting it; in fact, it is reported that that figure has already been secured. Chicago to Buffalo $3\frac{1}{2}$ cents.

Contract boats are still busy in the ore trade and there has been little outside chartering done; \$1.70 is quoted from the head of the lakes, \$1.60 Marquette. The Escanaba rate has been steady at \$1.35 to Ohio ports and \$1.50 to Buffalo.

The supply of lumber tonnage is not equal to the demand. Cargoes are offered freely at ports at the head of Lake Superior and owners are holding for \$5 per 1,000 feet. Boats are not chartered until they are about ready to load. Coal tonnage is in fair demand and chartering active. Shipments are held back somewhat on account of the scarcity of cars, but the movement is heavy enough to hold rates steady. A number of boats were placed for Lake Michigan ports at a dollar and the supply of tonnage for the head of Lake Superior is about equal to the demand at 50 cents. The steamer Sauber, which has two more cargoes of contract ore to carry from the head of the lakes at 60 cents, has been turned over to her new owners.

DREDGING CONTRACTS.

Bids have been opened in the office of Colonel Jared A. Smith, Corps of Engineers, U. S. A., for dredging that is to be done in the Black river and Monroe harbor. In the first named place there is dredging to the amount of 122,500 cubic yards and also logs to be dug out, for which the bids were submitted as follows: John Stang, of Lorain, 15 cents per cubic yard, total \$18,375; logging \$10; W. A. McGinnis, of Cleveland, dredging 10 cents per cubic yard; total \$24,000; logging \$12; Carlin, Stickney & Cram, Detroit, 19 cents for dredging, total \$23,275; logging \$10; James Rooney, of Toledo, dredging 23 cents per cubic yard, total \$28,175; logging \$15; L. P. & J. A. Smith Company, of Cleveland, dredging 18 cents per cubic yard, \$22,050; logging \$15; Edward J. Hingston, Buffalo, dredging 14 cents, total \$17,150; logging \$12.50.

The work in Monroe harbor amounts to 24,000 cubic yards of dredging, it being both in the old channel and in the river. The bids for this work were as follows; Edward J. Hingston, channel dredging $13\frac{1}{4}$ cents, river $12\frac{1}{4}$ cents, total \$4,160; Carlin, Stickney & Cram, river dredging 16 cents, channel 16 cents, total \$5,120; James Rooney, channel dredging 18 cents, river 23 cents, total \$6,160.

The lowest bidder on both jobs was Edward J. Hingston, of Buffalo, and it is likely that his bids will be recommended to the department at Washington, although the report on the bidding has not yet been made.

DULUTH COAL DOCKS.

The Pioneer Fuel Co., of Duluth, now claims the largest coal dock at the head of the lakes. The whole property, improved and unimproved, embraces 46 acres, of which 18 acres of improved dock surface are available for storage. The company is now starting up its electrical machinery and the improvements that have been in progress on this great dock for the last two years are about completed. Steam hoists the coal from the boat and electric power does the rest. It is said to be the only coal dock in the country that is so fully dependent on electric power for the operation of machinery.

The newly erected sheds for the storage of anthracite coal will accommodate 30,000 tons. There are three systems of conveyors for receiving, distributing, screening and loading anthracite coal, which are operated by one 80-horse-power electric motor, one 50-horse-power electric motor, and one 40-horse-power electric motor. There are also two coal scrapers in the sheds that are operated by two 15-horse-power electric motors. The tests of the machinery have been very successful. The distributing system of conveyors will distribute and deliver from the hoists to any desired place in the coal sheds 250 tons of coal an hour. On the dock there are also two car pullers operating a cable with which to pull cars on the loading tracks. These car pullers are also operated by electric motors.

On the soft coal part of the dock is established a motor that operates a wire cable which is about a mile in length. The motor that operates this cable is of 80-horse-power. This cable is situated on top of a high trestle and it operates the self-dumping tramcars which are loaded from pockets above, and which cars dump the coal automatically at any desired point on the whole length of the cable. This system was started only last week and performs its work admirably.

The conveyors, disc screens and motors are all new equipment and machinery. The disc screens are something new in the northwest, and are said to screen and size the coal better than any other method. The Link Belt Machinery Co., of Chicago, put in one of the conveyors, and Borden, Selleck & Co., of Chicago, put in the other two. John A. Mead & Co., of New York, supplied the tramcars and cable. The Burgess Electric Co., of Duluth, has done all the wiring and made the connections.

The entire dock is operated by electricity with the exception of the hoisting of the coal from the boat. The success of the operation of this great dock by electricity will be watched with interest by coal dock men in all parts of the country. It is expected that the cost of operation will not only be cheaper but that the results will be more satisfactory in every respect.

CONTRACTS FOR NEW TONNAGE.

The lack of material is the only thing that keeps lake shipyards from being filled with work. Repairs are heavy and there is any quantity of new tonnage to be placed as soon as contracts can be entered into for material.

The latest order placed is for two steel steamers having general hull dimensions of 435 feet in length and 50 feet beam, to be built to the order of Eddy Bros., West Bay City, Mich., one of which will probably be built at Detroit and the other at West Bay City. Estimated cost \$645,000 for the two.

THE official report for the first quarter of the present fiscal year shows that there was a large decrease in the tonnage of wooden vessels built and numbered, as compared with the corresponding part of 1898. The increase in steel tonnage completed was about 30 per cent. but the total for all kinds of vessels decreased moderately. About two-thirds of the steel tonnage was built on the Great Lakes. Hardly anything is done in lake shipyards in the building of wooden boats above the grade of yachts. That industry survives mainly on the coast of New England, and it does not flourish anywhere. So the coast was responsible for the net loss of tonnage construction during the first quarter of the fiscal year, as compared with the corresponding part of 1898. If the rest of the country had kept anywhere near the pace set by the Great Lakes in shipbuilding the figures which now fall below the record for the summer of last year would show a fine gain. It is the salt water part of the industry which has lagged behind. The lakes are doing great things in the building of splendid steel vessels, but they need some little help from the ocean to keep American shipping increasing at a good rate, in tonnage and value.

INCONGRUITY IN NAMES.

Some of the names selected for the various vessels that ply in these waters seem rather incongruous. "I think the names are about like dreams," said an old water frontier, "they generally go by opposites. I knew a schooner named the Path Finder," and she was ashore about half the time. One would naturally imagine that a path finder should know the way pretty well, but this one met with hard luck everywhere she went. Then there was a Hampton boat fisherman who bought a new boat one spring and called her the Hard Luck. He was an odd fellow and said that name ought to be a mascot. Well, it proved to be so, for he had the best of luck all that summer and made good money. He was the high liner of the mosquito fleet. Then there was a Bonanza that proved to be anything but that to her owners. She was built down east and was a losing boat from the time her keel was laid. The owners got stuck on the lumber they put into her and the men they hired to build her stuck them and put poor work into the craft, so that on her first voyage her seams opened and she had to be hauled off and done over. After that it was one constant string of petty repairs that required a continual outlay of money. One foggy night she went ashore and to pieces and her owners were mighty glad, I guess, to see their anything but bonanza out of the way. They don't seem to be any wiser to-day than they were in earlier days, either, for I saw a sloop go out of here the other day that was certainly wrongly named. Across her stern in big gold letters was the name Dewey. Now, you would naturally expect a boat named that to do something big, wouldn't you? At least the skipper ought to be a brave, manly man, to say the least. Well, the skipper of this Dewey was so drunk he couldn't stand and how far he got without coming to grief I can't say. Then there is a big two-masted fishing schooner, named the Imogene. Imogene! That's a nice name for a dirty old fisherman, isn't it? A craft of that sort ought to be called The Codfish, or The Shark, or something like that. Imogene is only suited to some light trifle of a gingerbread row-boat or yacht tender."—American Shipbuilder.

WILL NOT HARM BUFFALO.

Charles H. Keep, secretary of the Lake Carriers' Association, and of the Buffalo Merchants' Exchange, smiled when shown by a News Tribune reporter an interview with Hon. J. I. Tarte, Canadian minister of public works, in which the latter explains how a large volume of the present grain business of Buffalo may be diverted in the near future by the completion of the new Canadian canals. Mr. Tarte says that grain will be carried for 2 cents a bushel from Port Colborne to Montreal then and inquires where the port of Buffalo will be under that condition.

"No doubt," said Mr. Keep, "the Canadians will be able to increase the volume of their vessel business, but Buffalo will never know it as a result of delivering Buffalo business. We think we can hold our own and while the Canadians have their canals we have the Erie canal. The Canadians are not posted if they imagine that great systems like the New York Central, for example, are going to see their business diverted to Canada or anywhere else. We do not regard Port Colborne as a dangerous competitor of Buffalo. One thing that will help to hold the grain trade at Buffalo, in the event that any effort is made to divert it, is that a very large percentage of the west bound business of the lakes originates there. Buffalo not only expects to hold its own, but to get its share of the increase in the volume of grain business in the future as in the past."

Mr. Tarte is said to be outlining a policy whereby he feels confident of diverting much of the east bound ocean business originating in the northwest from Buffalo to Montreal, via Port Colborne. The bulk of this business now goes to Boston and New York via Buffalo. Mr. Tarte will endeavor to obtain a grant from the Canadian parliament for the improvement of the harbor at Port Colborne and for the construction of elevators there. The plan is to have big vessels deliver grain at Port Colborne and then transship it into boats of the Welland canal size and have it carried forward to Montreal to be again transshipped into ocean boats. It is said that the business of the port of Montreal is languishing, though the business of the Canadian lines out of Duluth this year have been heavier than ever before.

The Dominion government steamer Petrel seized the tug Latham D. Smith in Lake Erie last week and took her to Amherstburg for a violation of the coasting laws. She towed a dredge owned in Detroit from Amherstburg without clearing.

LETTERS AT DETROIT MARINE POST OFFICE.

OCTOBER 4th, 1899.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Appleby, Chas.	Murphy, Mary C.
Brayton, William, Hennepin.	Meagher, G. G. 2, Ira H. Owen.
Babcock, R. B.	McKenzie, Jas. A., Vega.
Burgess, Henry, Oliver.	McCool, Quarry B., Hennepin.
Baker, Nelson, C. S. Richards.	McKenney, James, Gould.
Cannon, John, 2.	McKinnon, John, 2.
Campbell, Edward.	McKendry, Mrs. M.
Delaney, Con.	McGuire, Mrs. Helen.
Fowler, Thos.	Noback, Gost, Niagara.
Farrand, J. A., 2.	Outhwaite, J. N., Germanic.
Ferrais, Jason, Germanic.	Porter, Wm. H.
Farnam, Mrs. L. D.	Parker, John.
Gagnon, G. P., 2, Martha.	Rettig, E. G., Rees.
Goodwin, Frank.	Reno, Columbus.
Grimes, Vincent.	Ray, Bob, Argo.
Glendon, Tim.	Swartout, Nelson, Oregon.
Graham, J. A.	Shoat, A. C.
Hoy, Thomas H.	Smith, Wm. H.
Hurley, Thos. 2, Dundee.	Smith, Frank, Uganda.
Ingham, Wm. 2.	Thomas, Albert, Pueblo.
Iler, F. H.	Thomas, William, Castalia.
Johns, Noah.	Warner, Walter.
Jackson, Arthur.	Wilson, Harry C.
Kinney, James.	Woods, Charlie.
Kemmis, E., Exile.	Wagner, E.
Marow, John D.	

FLOTSAM, JETSAM AND LAGAN.

The steamer Harlem was floated Wednesday evening and is now safe in Sisseton harbor. Temporary repairs will be made to enable her to make the trip to a dry dock.

The Great Lakes Towing Company has purchased the tugs Stedman and Holley from Huron parties. This completes the purchase by the company named of all the tugs at Huron.

The new Minnesota steamer Malietoa passed through the lock at Sault Ste. Marie with the largest load of iron ore that any steamer has yet carried through the locks. She had 8,215 net tons.

The Western Coal and Dock Co., of Waukegan, Ill., wishes to get in 30,000 tons more of coal this fall but is having trouble in getting boats at Buffalo, none having arrived at Waukegan for several days past.

The new steamer H. C. Frick last Thursday loaded what is said to be the banner load of flax from the Duluth-Superior harbor. It consisted of 250,000 bushels and is said to be the record for a straight load of flax for the lakes.

A complaint has been received by the Treasury Department at Washington from certain vessel men to the effect that they experienced considerable difficulty and delay in securing clearance papers at the port of Sandusky, O., late in the night. The matter will be investigated.

On the recommendation of Mr. S. T. Bastedo, Superintendent of Fisheries, the Ontario government will purchase the yacht Gilphie, at present owned by J. K. Bowman, of Southampton. She will be used for the purpose of patrolling the upper lakes and the Georgian Bay region to see that the fishing laws are enforced.

The movement to extend the time of service of the crews of the life-saving stations to ten months out of the year and to raise their pay \$10 a month to a total of \$70 a month is fast taking form. Prominent marine men of Chicago have already formulated a petition to Congress to help the surfmen and will enlist the aid of Mayor Harrison.

The first boat to go into winter quarters at Sandusky is the new passenger steamer Pennsylvania of the Erie and Buffalo line. The Pennsylvania will be moored for the winter at one of the Big Four docks between Lawrence and McDonough streets and for the next three or four weeks the crew will be kept busy placing the steamer in condition for the long winter lay up.

Mr. Creighton Churchill, of the Sault Ste. Marie branch hydrographic office has been appointed as local agent of the Lake Shore Iron Works, of Marquette. This concern makes a specialty of the manufacture of marine gas-oil engines, a number of which are in use at the "Soo." Through the efforts of Lieut. Churchill the company's business at this place will no doubt be largely increased.

The Green Bay Advocate states that P. F. Thrall, Omar L. Harder, and others comprising the Green Bay Vessel Co. are making preparations to build a wooden barge of 260 feet keel and an over-all length of 280 feet, with 40 feet beam and 15½ feet hold, during the coming winter. Part of the timber has already been ordered, and a sawmill is to be erected to work it up. Capt. Thrall will superintend the construction of the craft, while George Johnson, the local shipbuilder, will do the laying out. The craft will be so modeled and constructed that machinery can be put into her. But for the coming season at least she will be used as a barge, it being intended to tow her behind the steamer Normania, owned by the same company. The vessel will be ready for service by June 1, 1900.

DETROIT.

Special Correspondence to The Marine Record.

The hull of the steamer Schnoor has been sold by the Ricard Boiler & Engine Works, of Toledo, to the Paragon Refining Co.

Submarine diver Duff M. Feets is at Toledo to begin work for Capt. George Daily, blowing the hull of the burned steamer Dove to pieces.

Edward Dustin, of the firm of Ashley & Dustin, will continue the business during the balance of this season under the present firm name.

The tug Fabian of Buffalo, towing three empty canal boats en route to Chicago, was rather a strange sight here this week. The tug fueled at the Hurley coal dock.

The two steamers to be built by the American Ship Building Co., for the Eddy Bros., of Bay City, will cost \$300,000 apiece. The material for them has been ordered.

The negotiations for the sale of the steamers Parks Foster and Ira H. Owen are off. Capt. Felix Finn, of Chicago, who had the deal in charge, states that the affair has fallen through.

Work on Capt. Davidson's new dry dock at West Bay City is proceeding rapidly. At the Davidson shipyard a keel for a new wooden schooner of 4,500 tons capacity will be laid this week.

On Saturday afternoon Capt. Joe C. Miller, of Marine City, purchased the tug Runnels for \$5,000. The boat was owned by D. N. Runnels and Nelson Mills. She will be taken to Marine City.

The schooner John Wesley made the run from Port Huron to Alpena one day last week in about sixteen hours under sail. This is considered remarkably quick time for a small sailing vessel to make.

The stranded steamer Centurion was released from the middle ground at St. Clair after lightering about 500 tons of coal. The steamer is not damaged and the lightered coal will be put back on board at Port Huron.

In regard to the report that the D. & C. line would build new steamers and extend their service to Buffalo next season, general manager David Carter says: "It is false in every detail. No such additions are contemplated."

The new tug Searchlight, designed for fishing, was launched at Bay City Monday and will be given a trial trip as soon as she is inspected. Her builder claims that with the several inventions he has applied to her machinery a saving of at least 25 per cent. in the fuel bill will be made.

Gilchrist & Fletcher, owners of the tug that spent several days in searching for the foundered Hunter Savidge, presented Capt. Mullerweiss, owner of the Savidge, with a receipted bill for the tug's services, which amounted to \$300. The wife and little daughter of Capt. Mullerweiss were lost with the Savidge.

The small steamer Minnie M., owned by the Arnold line and trading to Cheboygan, Mackinac Island, and Sault Ste. Marie, was sold this week to the Sault Ste. Marie Paper and Pulp Co., with headquarters at the Canadian side of the river. The Minnie M. will be run from the "Soo" to Michipicoten in connection with the new railroad line being built to the iron mines in that vicinity.

Capt. W. Harrow reports from Houghton that the steamer Harlem will be sent to a lower lake yard for her rebuild. The steamer will start in about a week with four steam pumps aboard and steam on her boiler to work her own pumps. The tugs Boynton and Merrick will tow her. The steamer Snook and pumps of the Baker outfit were found unnecessary in raising the steamer and will be sent down at once.

After the battle of Santiago, Admiral Cervera's steam launch was found in a battered condition on the sunken flagship Almirante Oquendo. The engine was removed and shipped to the Detroit Dry Dock Co. Frank E. Kirby, its present owner, proposes to replace with new pipes, those which were perforated by American shells during the engagement. He will then put the engine in his own launch.

Capt. James Reid has done no work in connection with the sunken steamer Cayuga since the experience which nearly cost him his life. No one outside of Capt. Reid's employes seems to know what he went down to the Cayuga for, but his friends surmise that he intended to disengage the steel pontoons from the wreck so they might be used elsewhere whenever an opportunity presented itself. These pontoons no doubt will be recovered in the course of another season, as their service in connection with any further attempts to recover the Cayuga appears to be at an end.

The consolidation of the White Star line, Red Star line and Tashmoo Park companies, effected last spring, became a reality this week when the White Star company took formal control of the business and property of the other two organizations. The following officers are announced: President, A. A. Parker; vice-president, J. W. Millen; treasurer, John Pridgeon; secretary and traffic manager, C. F. Bielman; general manager, B. W. Parker. The White Star line will control the Greyhound, City of Toledo, and the new Tashmoo, which is to be one of the finest river boats in the water when she takes her place next season. The Star-Cole line, which will probably operate in connection with the White Star line, will own and control the Idlewild and Arundel. The officers of the latter corporation are: A. R. Lee, president and manager; C. F. Bielman, secretary.

Almy's Patent Sectional WATER TUBE BOILERS.

NOW USED IN

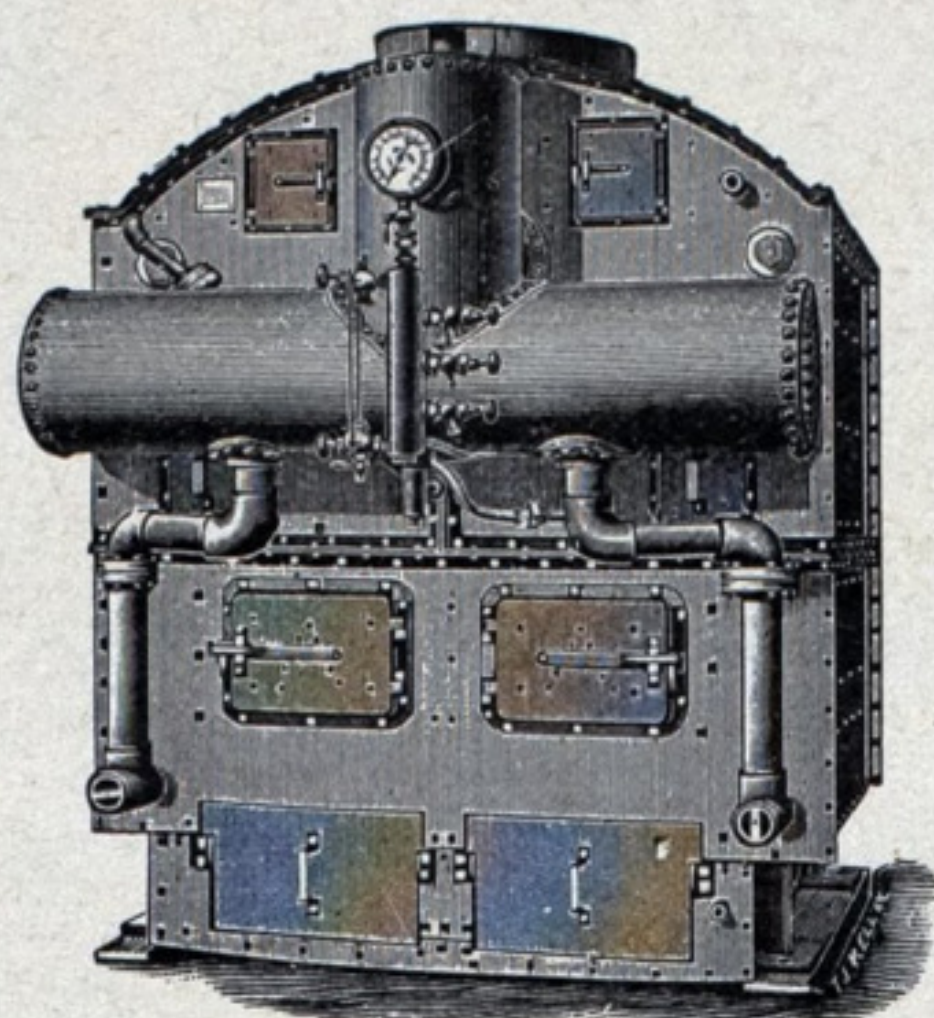
21 Passenger Boats from 70 to 160 ft. long.
61 Steam Yachts from 50 to 180 ft. long.

U. S. TORPEDO BOAT "STILETTO."

Numerous freight and fishing steamers, launches and stationary boilers are giving most excellent results.

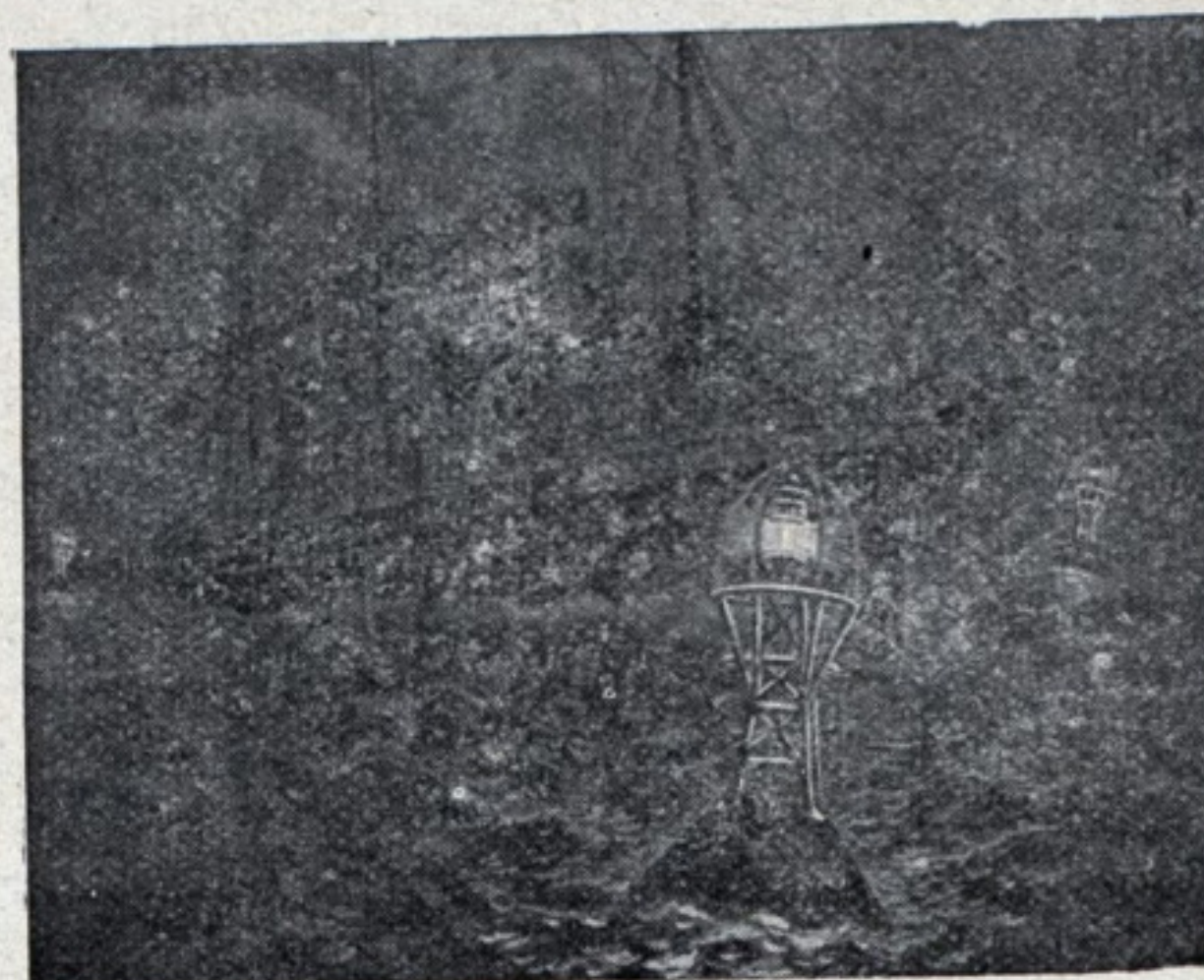
ALMY WATER TUBE BOILER CO.,

178-184 Allens Ave., near Rhodes St., PROVIDENCE, R. I.



Pintsch Gas Lighted Buoys.

Adopted by the English, German, French, Russian, Italian, and United States Light-House Departments for channel and harbor lighting. Over 800 gas buoys and gas beacons in service.



Burn Continuously

from 80 to 365 days and nights without attention, and can be seen a distance of six miles.

Controlled by

THE SAFETY CAR HEATING AND LIGHTING CO.

160 Broadway, New York City.

A FALSE LIGHT FOR "LANDLUBBERS."

Life is too short and crowded to permit the huge task of trying to correct all of the important blunders made by magazines which affect much wisdom and are often supposed to look down from heights of accuracy and dignity upon the hasty work of the daily papers. There are too many monthly publications, and they are too prone to gross mistakes.

Just now, however, it is necessary to mitigate the effect of the misinformation given in regard to the sailing of racing yachts, in a conspicuous article in McClure's Magazine for October. One Ray Stannard Baker is the author, and he manages to give an impression of all sufficient and all pervasive knowledge of his subject which is well calculated to mislead many readers eager to know more of the subject made so interesting by the international struggle for the America's cup.

Most of what this writer says is correct enough, and the article is well designed to interest and instruct those who do not know much about yachts and yacht racing. But there is one simply ridiculous exhibition of ignorance. It is embodied in the following paragraph:

"A landlubber is quite likely to think that a yacht makes its best speed when running before the wind—that is, when the wind is exactly on its stern—but that is not the case. The Columbia, for instance, can make more speed by several miles an hour when reaching than when running before the wind. The reason for this is simple. With the wind astern, only her mainsail and spinnaker, with possibly a topsail and one forward sail are filled and drawing, whereas while she is reaching she spreads her full canvas—mainsail, topsail, forestaysail, jib and jib topsail, and often an enormous balloon jib-topsail, provided the wind is not too heavy."

Nothing could be more absurd than this explanation of the fact stated, that yachts do not make their best speed with the wind astern. It is not true that more canvas is filled and drawing when a yacht is reaching than when it is running before the wind. And if that was the case the explanation would still be ridiculous, because of the difference in the directness of the application of the wind's force. The reason for the comparative slowness of running directly before the wind is an altogether different matter.

When a yacht has the wind abeam or on the quarter the pressure is sustained at nearly the full weight of the wind, however fast the boat goes. But when the yacht is directly before the wind the more easily it slips through the water and the nearer it comes to the wind's speed, the less the force bearing on its sails becomes. It simply runs away from the power that drives it. In no case can any vessel or moving thing of whatever kind go faster than the wind which blows it, if it is wholly dependant upon sail power and the wind is astern. That is obvious. But if the resistance of whatever substance the boat or other object blown by the wind passes through is very slight and the wind is heavy and on the beam, the thing which depends wholly on the wind for motion may outstrip the wind itself.

The reason is that however fast the sail of an ice boat, for example, is rushing along, if the wind is blowing at right angles to the course of the boat the pressure on the canvas continues. When a steamer goes faster than a wind blowing in the same direction the smoke of the vessel's furnaces drifts backward over the stern. It has the appearance, from shore,

of moving against the wind, and a person on the deck of the ship feels the motion of the air in the opposite direction from the real course of the wind. But no matter how much faster than the wind a steamer may go the smoke always continues to blow off to one side, if the wind is on the beam or at right angles to the path of the vessel.

This point has tangled up the wits of many an able man who had to deal with it off hand. Some years ago, when the redoubtable "Field Marshal" Murat Halstead was editor of the Cincinnati Commercial, a reader wanted to know, one hot summer day, whether it was true that an ice yacht could sail faster than the wind which was blowing at the time. The gallant warrior replied that he did not believe that any boat could go faster than the wind which blew it along. Then, with some lingering memory, perhaps, of accounts of ice yachts beating any speed possible to a wind which was not a hurricane or something of that sort, he added: "Ice yachts make us tired, anyway, in this weather."

But ice boats do often far exceed the speed of the wind which they depend upon for motive power. When the wind is thirty miles an hour and the ice is smooth, they can make forty miles an hour or more, provided that the wind is on the beam or quarter. There could not be any better illustration of the real cause of the superior speed of a yacht when reaching, as compared with its work running before the wind.

This point is something more than a detail of yachting. It involves an important fact in physics, and for that reason any magazine ought to be ashamed to blunder egregiously in dealing with the subject.—The Cleveland Leader.

POOR EQUIPMENT.

It appears that it is almost impossible to equip passenger steamers to suit everybody at all times. The Engineering News of recent date says:

"An instance of overcrowding was brought to the attention of a member of the staff of this journal, who crossed on the steamer Werkendam, of the Holland America line, leaving Amsterdam August 17 and Boulogne-sur-Mer on August 18. According to the United States certificate of inspection, posted in a prominent place on the vessel, she carried eight boats, four of them lifeboats and three life rafts, carrying capacity of boats and rafts not stated, and 318 cork life preservers, and the vessel was allowed to carry 112 cabin and 128 steerage passengers, a total of 240. The vessel actually carried, however, on this trip 86 cabin and about 550 steerage passengers, a total of more than two and a half times the number allowed by the United States inspectors, or twice as many passengers as there were life belts. If the vessel had collided with an iceberg, a derelict or another vessel, and the crew and passengers been forced to take to the boats, the horror of the situation may be imagined. Allowing that 112 life belts were in the rooms of the cabin passengers, and, therefore inaccessible to the steerage, and that some of the remaining belts were appropriated by the crew, there would be 206 life belts to be divided among 550 steerage passengers; and it is not possible that the lifeboats and rafts were anywhere near sufficient to accommodate both passengers and crew, numbering over 700 in all. The facts above stated were communicated by letter to J. A. Dumont, Supervising Inspector General of the United States Steamboat Inspection Service, and he replies as follows: Sir—Referring to your letter of the 8th inst., in relation to excess

of passengers on the steamship Werkendam over that allowed by the United States certificate of inspection on her voyage from Amsterdam, arriving at New York, Aug. 29 ult. you are informed that the United States certificate only covers the voyage from the United States to a foreign port, the United States inspection laws having no force on steamers bringing passengers to the United States. James A. Dumont, Supervising Inspector General.

"It appears, then, that the United States inspection laws offer some assurance to an American citizen who makes a trip to Europe that on the outward voyage, when the vessel takes the southern passage, to avoid the fogs on the banks of Newfoundland and the icebergs, and when there is no fear of the steamer being overcrowded with steerage passengers, there will be enough lifeboats, rafts and life belts for the use of all the passengers and crew, but that on the homeward voyage, when the vessel takes the northern route, passing through the fogs on the Banks, and when the steerage is packed with immigrants from Russia and Southern Europe, United States laws offer him no protection whatever. If the United States laws are competent to restrict immigration by means of medical inspection, by the returning at the expense of the steamship companies those immigrants who are likely to become paupers, by the contract labor law and by the entire exclusion of the Chinese, it would appear that they should also be competent to restrict it by imposing a heavy fine on vessels which arrive at our ports crowded with passengers far beyond the limit which the law permits on outward voyages. A law imposing such a fine and a stringent enforcement of it, has a much stronger reason for existence than simply the desire to restrict immigration. It is that it is necessary to reduce the dangers to human life of the transatlantic passage."

DIFFICULTIES OF NAVIGATION.

"How do you manage to find your way across the ocean?" said a lady to the sea captain

"Why, by the compass. The needle always points to the north."

"Yes, I know. But what if you want to go to the south?" —London Punch.

Gov. THEODORE ROOSEVELT will contribute an article to McClure's Magazine for October on Admiral Dewey. He was Assistant Secretary of the Navy at the time Dewey was assigned to command the Asiatic squadron, and he will tell how Dewey came to be chosen for that position and what the department thought of him and expected of him at that time. The article will be very fully illustrated with new portraits of Admiral Dewey aboard the Olympia, and his officers and crew, and other interesting pictures.

IN a report dealing with comparative tests of sheaves, made some time ago by order of the Bureau of Construction, Naval Constructor F. T. Bowles, now in charge of the Brooklyn Navy Yard, says the tests showed that the Parkin ball bearing bushing was superior in simplicity, durability and ease of working to the bushing then in government use. He was also of the opinion that, although the first cost of the bronze sheave of the Parkin bushing was greater than that of cast iron sheaves, the bronze sheaves were more economical. The Parkin ball bearing sheaves are manufactured by the Pennsylvania Block Co., Seventh and Cherry streets, Philadelphia, Pa.

PERFECT LUBRICATING METAL.

There has long been a demand among machinery manufacturers and users, for a perfect bearing metal. Many different brands of metal have been placed on the market for this purpose from time to time, each having certain claims of superiority. In presenting to the trade their bearing metal the Perfect Lubricating Co., of Cincinnati, O., have aimed to meet requirements of the situation by employing high-grade materials, in proper proportion, for the production of a superior bearing metal. In this they have succeeded to a most flattering degree, judging from the rapid growth of their trade, and the many testimonials given them by users of their metal. They are now favored with a very large and increasing demand, not only from the leading manufacturers throughout this country, but from the foreign countries as well.

Their product is a phosphorized tin graphite metal, which requires great skill and pains to manufacture. Unexcelled lubricating metals, it is stated, has heretofore been regarded as an impossibility. Users of metal of this character will certainly serve their best interests by carefully investigating the merits of the "Perfect Lubricating Metal," and learning of the experience of others who have used it. A paper weight composed of this lubricating metal will be sent on request.

THE KAISER'S SERMON.

A good story about the kaiser comes from Berlin. It is well known that his majesty, during his annual trip on board the Hohenzollern to the Norwegian fiords, is in the habit of conducting divine service every Sunday. He usually reads a short liturgy and follows the prayers with a sermon, not of his own composition, but from the collection of some well-known German divine. During his recent trip the officers of the Hohenzollern noticed that a sailor, during divine service, either overcome with the heat or from some other cause, had fallen fast asleep. Their consternation was great, and they were relieved when the imperial sermon came to an end and the sailor awakened with a start. After the service the captain called the sailor before him, gave him a sound rating and sentenced him to two days' arrest. Now, it happens that on Sunday afternoons on board the Hohenzollern it is the kaiser's custom to hear the captain's reports of the events of the preceding week. If any sailor has distinguished himself the kaiser shakes hands with him or says a few kindly words; if a sailor has been punished the kaiser hears the details. The captain reported the incident of the sleeping sailor and the punishment inflicted on him.

"Was he on watch the night before?" asked the kaiser.

"He was, your majesty."

"Then let the poor devil off. Besides, it wasn't much of a sermon, anyway."

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—WISCONSIN.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
WASHINGTON, D. C., Sept. 27, 1899.

MILWAUKEE BREAKWATER LIGHT STATION.—Notice is hereby given that, on or about October 5, 1899, the two fixed lantern lights, red vertically above white, will be moved 874 feet southerly and established permanently on the southerly end of the completed breakwater, Milwaukee harbor.

The focal planes of the lights will be respectively 33 and 26 feet above mean lake level.

The completed portion of the breakwater is 300 feet long, leaving an opening of 574 feet between that and the portion previously constructed.

The direction of the breakwater is N. 11° E. and S. 11° W. The new position of the lights will be approximately 4,170 feet (¾ mile) N. 48° 30' E. (N.E. ¼ E.) from the Milwaukee Pierhead Light-House.

Vessels are cautioned to pass to the southward of the lights (in their new position) on entering and leaving the harbor. Bearings are true.

By order of the Light-House Board:

FRANCIS J. HIGGINSON,
Rear-Admiral, U. S. Navy, Chairman.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 9TH DIST.,
CHICAGO, Ill., Sept. 28, 1899.

LANSING SHOAL GAS BUOY.—Notice is hereby given that on or about October 4th, 1899, the Lansing Shoal gas buoy, northerly end of Lake Michigan, will be moved about one-third of a mile S.E. by S. of its present position and placed to the southward of a rock with but 15 feet of water on it. On the same date the red spar buoy established September 18th, 1899, to mark this rock, will be discontinued.

This notice affects the "List of Lights and Fog-Signals, Northern Lakes and Rivers, 1899," page 92, after 482—and the "List of Beacons and Buoys, Northern Lakes and Rivers, 1899," page 128.

By order of the Light-House Board:

F. M. SYMONDS, Commander, U. S. N.,
Inspector 9th Light-House Dist.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Maritime Liens—Priority—Claims for Torts of Master.—The conversion by the master of goods shipped on a vessel constitutes a tort, and a claim therefor against the vessel is entitled to priority over liens for supplies furnished prior to the tort. The Escanaba, 96 Fed. Rep. (U. S.) 252.

Collision—Determining Fault—Maneuvers of Vessels in Dangerous Situation.—Where the failure of the steamer to give the required signals on nearing a bend in the channel which hid her from a vessel approaching from the other direction was plainly the cause of the two vessels being placed in a dangerous situation, and a collision resulted, the maneuvers of the other vessel in attempting to avert the

collision will not be severely scrutinized, for the purpose of placing upon her a part of the responsibility. The R. M. Waterman, 96 Fed. Rep. (U. S.) 253.

Thirteenth Constitutional Amendment—Involuntary Servitude—Seamen—Habeas Corpus.—Alien seamen, who are being coerced to labor on board an American vessel against their will, and without having voluntarily entered into any contract binding them to such service, are being subjected to involuntary servitude within the United States, in violation of the thirteenth constitutional amendment, and are entitled to a writ of habeas corpus to deliver them from such servitude. In re Chung Fat et al., 96 Fed. Rep. (U. S.) 202.

Collision—Failure to Give Proper Signals—Steamers Nearing Bend in Channel.—Inspectors' rule No. 5, which requires steamers when nearing a short bend or curve in the channel, where from the height of the banks or other cause a steamer approaching from the opposite direction cannot be seen from a distance of half a mile, to signal upon arriving within half a mile of such curve or bend, as literally construed, is imperative one very steamer "nearing" such short curve or bend, whatever may be her intention as to future navigation after she shall have reached it, and the rule applies to a steamer passing up the west channel of the Harlem river on approaching Horn's Hook, though bound up the Sound. The R. M. Waterman, 96 Fed. Rep. (U. S.) 253.

Seamen—Shipping Articles—Deviation of Ship from Ordinary Voyage—Release.—An American registered vessel had been engaged for a number of years in the carrying of passengers and freight between the ports of Hong Kong, China, and Tacoma, in the United States, touching at other ports in China, Japan, and British Columbia. For such voyages it employed Chinese seamen in Hong Kong, the custom being to consider their term of service as ended on the completion of the round trip and return of the vessel to Hong Kong, which was the port of discharge, although the shipping articles fixed the term of service at six months, and authorized the vessel to go "to any other ports or places in any part of the world, as the master may direct." On the arrival of the vessel at Tacoma on one of its usual voyages, it was chartered by the United States Government as a transport to be used in conveying troops and supplies to Manila. Held, that such service on the part of the seamen was within the terms of their shipping articles, and, as the voyage to Manila was in the direction of Hong Kong, and after its completion could either proceed to that port, or secure transportation there for the seamen within the term of six months, they were not entitled to be released from their contract by reason of deviation of the ship from its usual business or route, but that the owners would be required to give bond for the release of the seamen, and their return to Hong Kong, in accordance with the contract, after completion of the voyage to Manila. In re Chung Fat et al., 96 Fed. Rep. (U. S.) 202.

ELECTRIC LIGHT SIGNALS AT MENOMINEE.

Arrangements have been completed looking to the early display of electric light signal lanterns from the tower of the Fire Department Engine House No. 1, Menominee, Mich. The electric light signals replace the oil lanterns formerly in use.

TOBIN BRONZE

(Trade-Mark Registered.)

Tensile strength of plates one-quarter inch thick, upward of 78,000 lbs. per square inch. Torsional strength equal to the best machinery steel. Non-corrosive in sea water. Can be forged at cherry red heat. Round, Square and Hexagon Bars for Bolt Forgings, Pump Piston Rods, Yacht Shafts, etc. Rolled Sheets and Plates for Pump Linings and Condenser Tube Sheets, Centerboards, Fin Keels and Rudders.

The Ansonia Brass & Copper Co.

SOLE MANUFACTURERS,

Send for Pamphlet.

99 John St., NEW YORK.

S. F. HODGE & CO.

MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.
312 ATWATER STREET,
DETROIT, MICH.

Chas. E. & W. F. Peck,

58 William Street, New York City.

Royal Insurance Building, Chicago, Ill.

C. T. BOWRING & CO.

5 and 6 Billiter Avenue, E. C.,

London, England.



Insurance

BROWN & CO., - - - 202 Main Street, Buffalo, N. Y.
PARKER & MILLEN, 15 Atwater Street, W., Detroit, Mich.
J. G. KEITH & CO., - 138 Rialto Building, Chicago, Ill.
LA SALLE & CO., Board of Trade Building, Duluth, Minn.

Are prepared to make rates on all classes of Marine Insurance on the Great Lakes, both CARGOES AND HULLS.

The Salvage Association of North America.

INCORPORATED 1899.

AN ASSOCIATION FOR THE PROTECTION OF UNDERWRITERS' INTERESTS AS REGARDS WRECKED AND DAMAGED PROPERTY AT SEA.



Application for the services of surveyors of this Association may be made to either the Chicago or New York offices.

Chicago Office,

ROYAL INSURANCE BLDG.

New York Office,

MUTUAL LIFE INS. CO. BLDG.

Prominent Fueling Firms==Docks and Lighters.



Steamboat Fuel at Chicago.

YOUGHIOGHENY and
LEHIGH COAL CO.

J. T. CONNERY, Manager. ARCHIE J. HITCHCOCK, Dock Supt.

MAIN OFFICE: 1238-1242 Chicago Stock Exchange Building.

Long Distance Telephone, Main 5049. 110 LA SALLE STREET.

FUEL DOCKS: No. 1, Michigan Slip and Basin. 'Phone 3046, Main.

FUEL LIGHTER: No. 2, N. Halstead St. Bridge. 'Phone 773, North.

Equipped with 125 2-ton Buckets for Fueling anywhere in Harbor

WE PRODUCE OUR YOUGHIOGHENY COAL, AND GUARANTEE QUALITY.



Steamboat Fuel at Cleveland.

THE PITTSBURGH &
CHICAGO GAS COAL CO.

J. A. DONALDSON, Manager. N. J. BOYLAN, Fuel Manager.

OFFICE: 420-421 PERRY-PAYNE BUILDING.

TELEPHONE, MAIN 1888.

FUEL DOCKS: No. 1, River Bed, through Valley R. R. Bridge. } Telephone, West 190.
No. 2, Main River, Foot of West River Street. }

300 Tons Capacity; Fuel Anywhere in the Harbor.

PICKANDS, MATHER & CO.

PIG IRON.
IRON ORE AND COAL.

FUEL LIGHTERS

AT BUFFALO, ASHTABULA, AND CLEVELAND. At DETOUR, MICH., A FUEL DOCK equipped with Shute capacity of 600 Tons. Best Quality PITTSBURGH COAL furnished at any time during Day or Night.

WESTERN RESERVE BUILDING, CLEVELAND, O.

M. A. HANNA & Co.

COAL, IRON ORE AND PIG IRON.

Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.

Fuel scow with elevators and discharging spouts. Storage of 650 tons. Discharges 150 tons an hour into steamers while unloading cargo.

LIGHTER

carrying different grades at all times.

MINERS AND SHIPPERS.

MAIN OFFICE, Perry-Payne Bldg., Cleveland, O.

THE W. L. SCOTT COMPANY,

ERIE, PA.

WHOLESALE DEALER IN

Shamokin-Wilkes Barre ANTHRACITE.

Youghiogheny, Mansfield, PITTSBURG.

Vessel Fueling a Specialty

by steam lighter or car dump, at all hours. Electric light.

MAIN OFFICE: SCOTT BLOCK. LONG DISTANCE 'PHONE 440.

FUELING OFFICE: CANAL DOCK. LONG DISTANCE 'PHONE 320.

...Coals

Youghiogheny River Coal Co.

MINER AND SHIPPER OF

OCEAN MINE COAL.
YOUGHIOGHENY
GAS AND STEAM

General Office: Erie, Pa. Long Distance 'Phone 409.

Shipping Docks: Ashtabula, O. Long Distance 'Phone 76.

VESSELS FUELED AT ALL HOURS

ELECTRIC LIGHT.

WITH OCEAN COAL ONLY,
BY STEAM LIGHTER OR CAR DUMP

Use the Vanduzen
Steam Jet...

PUMP

THE BEST STEAM JET PUMP IN THE WORLD.



It pumps the most water using the least steam.

Its cost is a little more than the common syphon, but will use only one-third the quantity of steam; and it takes coal (? of \$) to make steam.

The only reliable Jet Pump for fires on steam vessels.

A No. 7 Pump, costing \$25.00, will force water through 50 feet of hose and throw a 3/4-inch solid stream of water 75 feet from end of nozzle without fail as long as there is water at end of suction pipe. It will not freeze. Has no valves.

Every pump guaranteed. Ask your ship chandler for them, or write to us for illustrated catalogue.

THE E. W. VANDUZEN CO., CINCINNATI, O.

The Cuddy-Mullen Coal Co.

Miners and
Shippers of

STEAM COAL

FUELING DEPARTMENT
FACILITIES.

CLEVELAND HARBOR.—Car Dumper; Eight Pockets, 1000 Tons Capacity; Lighter Steam Derricks.

DETROIT RIVER BRANCH.—Amherstburg; Four Pockets; Three Steam Derricks

SANDWICH—Fourteen Pockets and Two Steam Derricks.

"SOO" RIVER BRANCH.—Two Docks, (Formerly known as the Anthony and Watson Docks,) Equipped with Pockets and Steam Derricks.

GOOD
COAL.

COURTEOUS
ATTENTION

QUICK
DISPATCH.

General Offices, Perry-Payne Bldg., Cleveland, O.

PATENTS

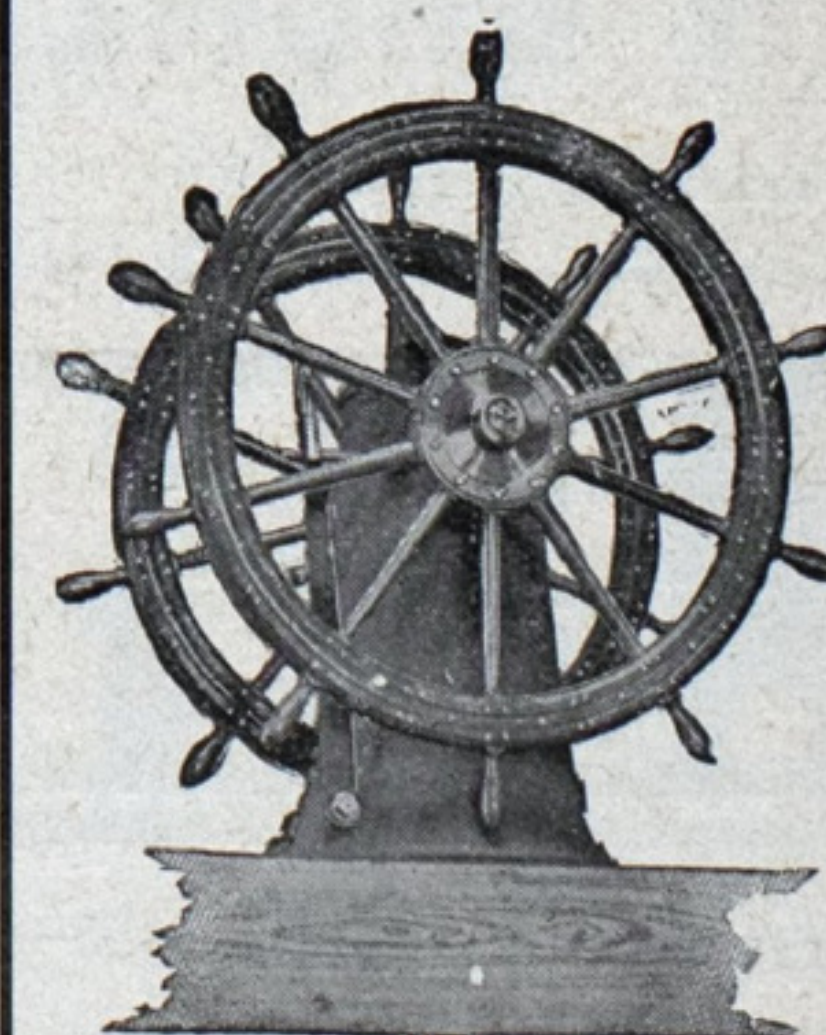
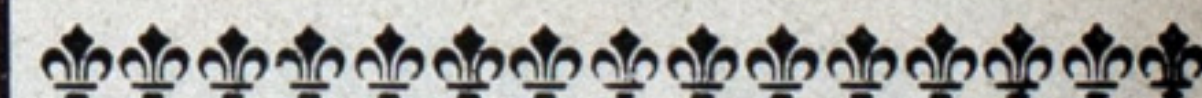
Procured on Inventions
and Designs. Labels,
Prints and Trade Marks
Registered.

Sixteen Years' Experience.

R. W. BISHOP, - Washington, D. C.

\$2.00

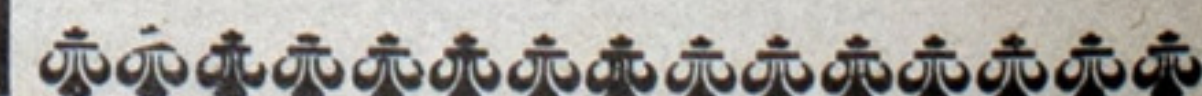
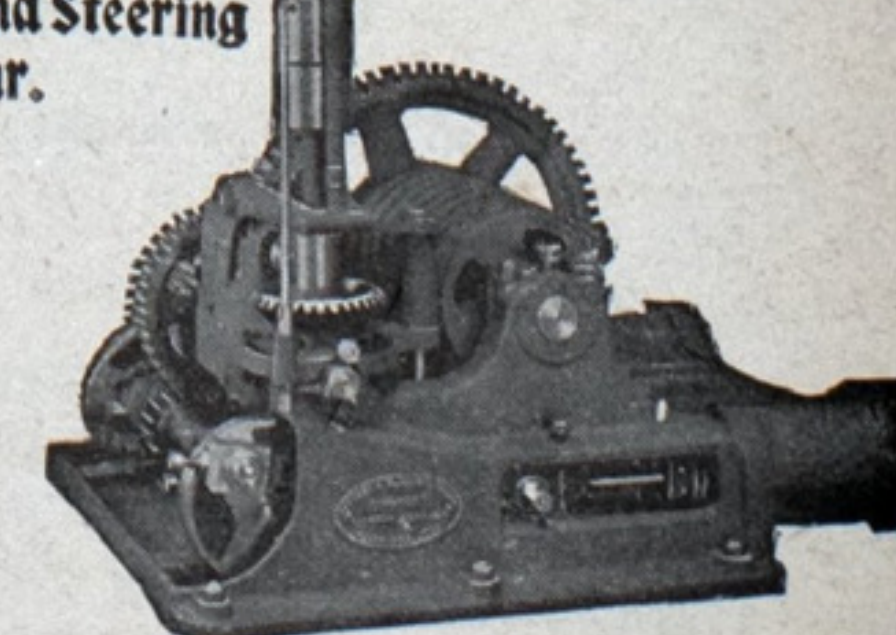
Pays for 52 copies of
The Marine Record in-
cluding Supplements.



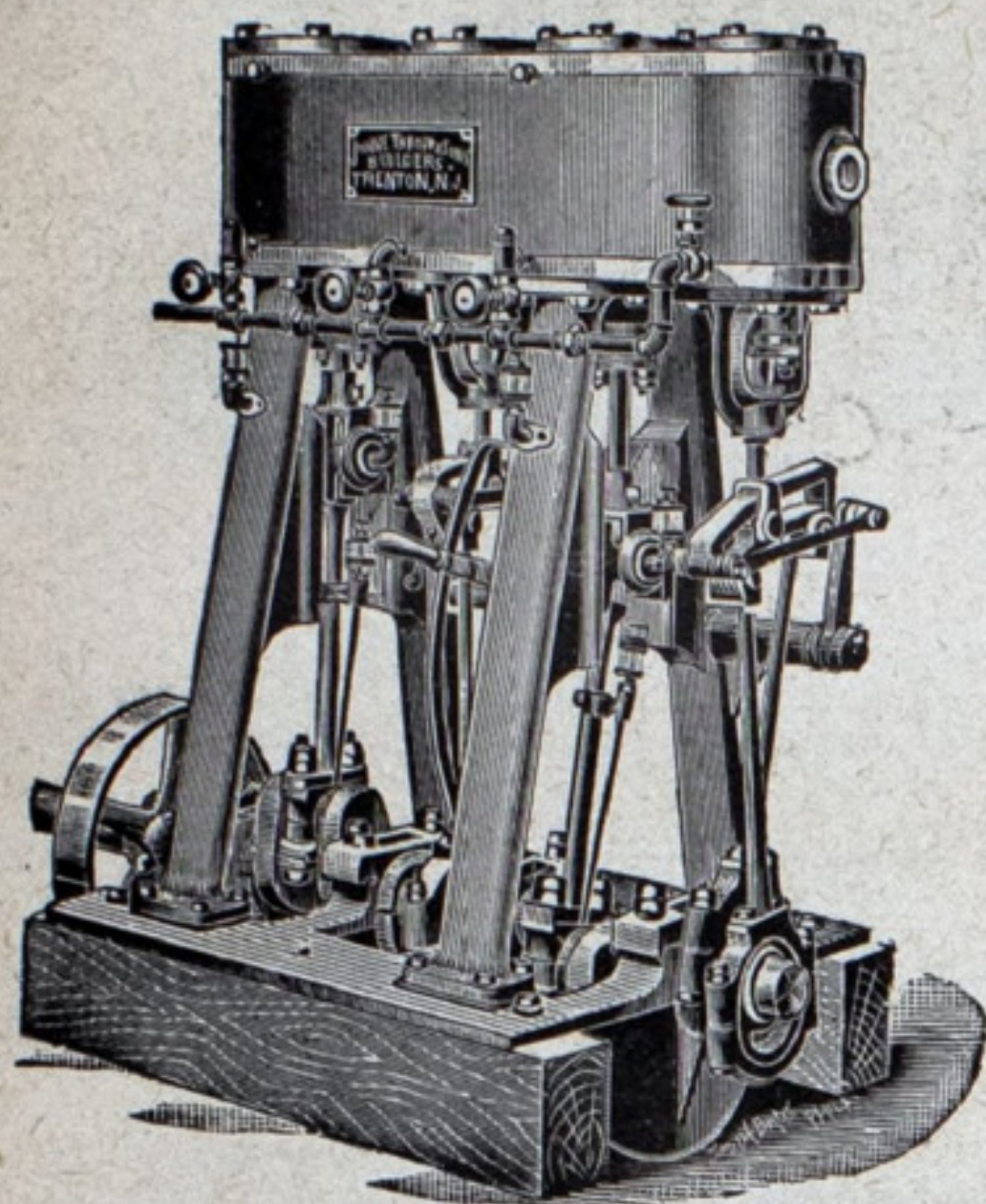
Simplest,
Strongest
and most
Reliable.
Changed
from Steam
to Hand or
back by one
lever in less
than one
Second.

No. 8
Beck Patent
Steam and
Hand Steering
Gear.

BUILT BY
Pawling & Harnischfeger,
Milwaukee, Wis.



John E. Thropp & Sons' Co.



BUILDERS OF
Compound and Triple Expansion
ENGINES,

Boilers, Surface Condensers, Propeller
Wheels, Etc.

Contracts taken for yachts and tugs
complete. Send for photographs of En-
gines and descriptive pamphlet.

Works on Delaware & Raritan Canal Basin,
TRENTON, N. J.

THE KENNEY FLUSHOMETER

FOR FLUSHING WATER CLOSETS.

No Cup Leathers or Springs.

THE BEST SYSTEM EVER INVENTED FOR USE ON
STEAM VESSELS.

Owners and constructors of Steamships, Yachts and
Steamboats have found it indispensable. Used by
the U. S. War and Navy Departments. Transports
Grant, Sheridan, Burnside, Terry, Hooker, Thomas,
Sedgewick, Meade, McClellan, Sherman, Crook.
Also Albany Day Line Steamers and others.

THE KENNEY FLUSHOMETER

Is Patented and Manufactured only by

THE KENNEY CO.,

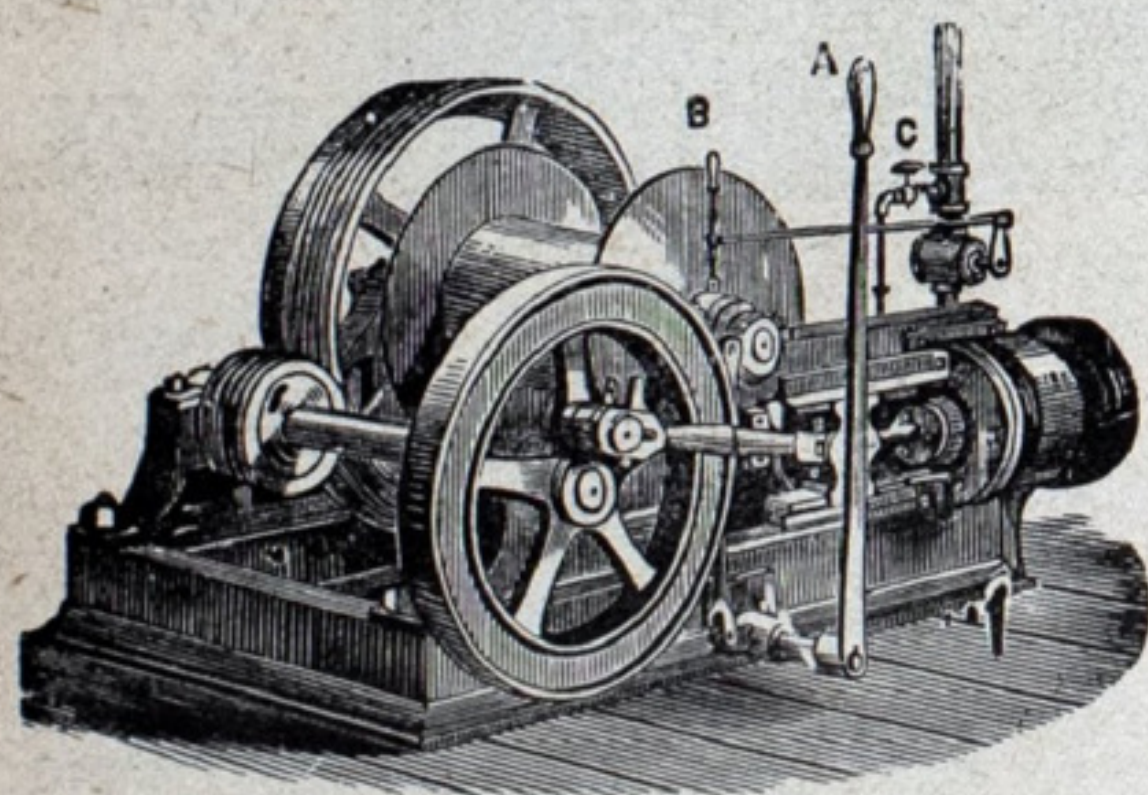
Who guarantee the successful operation of the system.

Send for illustrated pamphlet,

THE KENNEY COMPANY,
72-74 Trinity Place, NEW YORK.

WILLIAMSON BROS.

COR. RICHMOND AND YORK STS.,
Philadelphia, Pa.



HOISTING and SHIP ENGINES
STEERING ENGINES.

With either Fractional, Spur or Worm Gear of
Various Patterns to Suit all Purposes.

Compasses Adjusted

For deviation, and deviation
tables supplied. Great facilities
for doing the work by day or
night.

John Maurice.

Office, 24-26 Market St., CHICAGO.
Residence, 1155 South Sacramento Avenue.



Moore's Anti-Friction
Differential Chain

HOIST

Adjustable Automatic Brake.
Self-sustaining at every point
Highest Efficiency.
A New Movement.
A Perpetual Compound Lever
Powerful, Simple and Durable
Light, Compact and Strong.

11 SIZES.

Half-Ton to 15 Ton Capacity.

Compressed Air Motor
Cranes and Hoists.

Hand Power Cranes,
Trolleys, Etc.

Chisholm & Moore Mfg. Co.

CLEVELAND, OHIO.

SHERIFFS MFG. CO.

ESTABLISHED 1854.



MILWAUKEE, WIS.

THE CHASE MACHINE COMPANY, ENGINEERS AND MACHINISTS.

MANUFACTURERS, UNDER THE CHASE PATENTS, OF

Fog Whistle Machines, Hoisting Engines,
Power and Drop Hammers, and other Machinery.

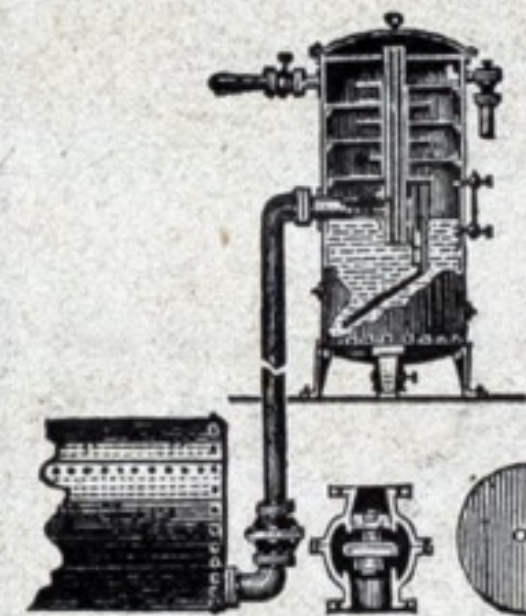
Steering Engines

Automatic Towing Engines,
Engineers' Supplies and General Jobbing.

111 ELM STREET.

TELEPHONE, MAIN 994.

CLEVELAND, O.



**Buffalo Feed Water Heater
AND PURIFIER.**

Made in all Sizes and to Suit all Conditions.

ROBERT LEARMONTH,

200 Bouck Ave., BUFFALO, N. Y.

Send for Catalogue.

Scott's Coast Pilot for the Lakes.

Price, \$1.50.

For Sale by

THE MARINE RECORD,
Western Reserve Building, Cleveland.

JOHN DONNELLY, SR., PRES.
JOHN DONNELLY, JR., VICE PRES.

H. B. FOLGER, TREAS.
THOS. DONNELLY, SECY.

THE DONNELLY SALVAGE AND WRECKING CO., Ltd.

KINGSTON, ONT.

EXPERIENCED DIVERS, TUGS, STEAM PUMPS, ETC.,
SUPPLIED ON SHORTEST NOTICE.

NEVERSINK CORK JACKET AND LIFE BELT.

Warranted 24 lb. Buoyancy and full Weight of Cork, as required by U. S. Inspectors. Consolidated Cork
Life Preservers. Superior to all others. Rings Buoys and Fenders. SAFEST CHEAPEST.
Approved and adopted by U. S. Board of Supervising Inspectors.
Also adopted by the principal Ocean, Lake and River Steamer Lines as
the only Reliable Life Preserver. Vessels and trade supplied. Send for
Catalogue.
Awarded four medals by World's Columbian Exposition.



METALLIC
and
WOODEN
LIFE
BOATS.



Metallic Life Rafts, Marine Drags.

Manufacturer of Woolsey's Patent Life Buoy, which is the lightest,
cheapest and most compact Life Raft known. Send for illustrated cata-
logue. Get our prices before buying elsewhere.

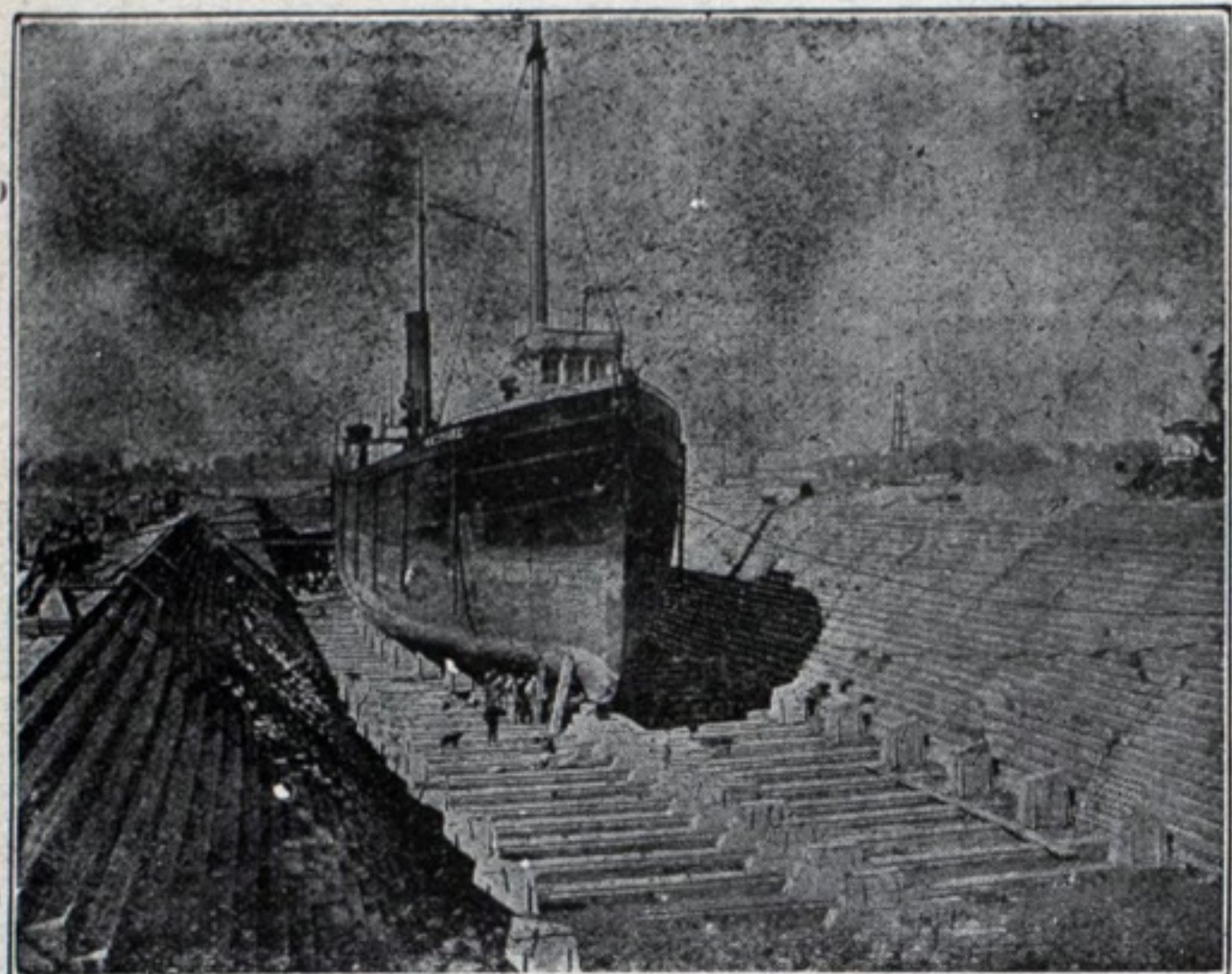
D. KAHNWEILER'S SONS, 437 Pearl St., New York City.



For Stationary, Portable,
Traction Engines, Tugboats, &c.
Thoroughly Reliable—Perfectly Automatic.

JENKINS BROS., - Selling Agents.
NEW YORK, BOSTON, PHILA., CHICAGO.





Craig Ship Building Co.

TOLEDO, OHIO.

New Dry-Dock 450 feet long, 110 feet wide on top, 55 feet wide on bottom, 16 feet water on sill.

Repairs to Metal and Wooden Ships a Specialty.

**Metal
and Wooden
Ship Builders.**



Simpson Dry-Dock Co.

General Contractors and Consulting Engineers,

BUILDERS OF

Simpson's Patent Dry-Dock,

35 BROADWAY, NEW YORK.

THE BEST BOOK OF AMERICAN LAKE SHIPPING.

BEESON'S MARINE DIRECTORY FOR 1899.

A cloth bound, gilt embossed volume of 260 pages, containing alphabetically arranged lists of all American steam and sail vessels on the Northwestern lakes, giving tonnage, length, breadth and depth of each, place and year of build, and name and address of managing owner. These lists are the originals published annually and are not taken from other publications. Their correctness is all that can be possibly obtained in a technical work. Many miscellaneous features are comprehended in its contents. Among them a list of American lake ports, with description of each, numbering over two hundred.

Mailed to any address, postage prepaid, on receipt of subscription, \$5.00.

The Marine Record, THIRD FLOOR, WESTERN RESERVE BUILDING, CLEVELAND, O.

LIFE BOATS.

YAWLS.

LIFE RAFTS.

DETROIT BOAT WORKS

DETROIT, MICH.

STEEL, IRON AND WOODEN TUGS.

STEAM AND SAIL YACHTS.

ALL KINDS OF PLEASURE BOATS, FISHING AND HUNTING BOATS, SHELLS, BARGES, GIGS AND CANOES.

Safety Hollow Staybolts

Guaranteed to meet Government Specifications and Inspection.



MANUFACTURED FROM BEST QUALITY STEEL OR CHARCOAL IRON.

FALLS HOLLOW STAYBOLT CO.,

Cuyahoga Falls, O.

Write for Samples and Prices.

Superior Ship Building Co.

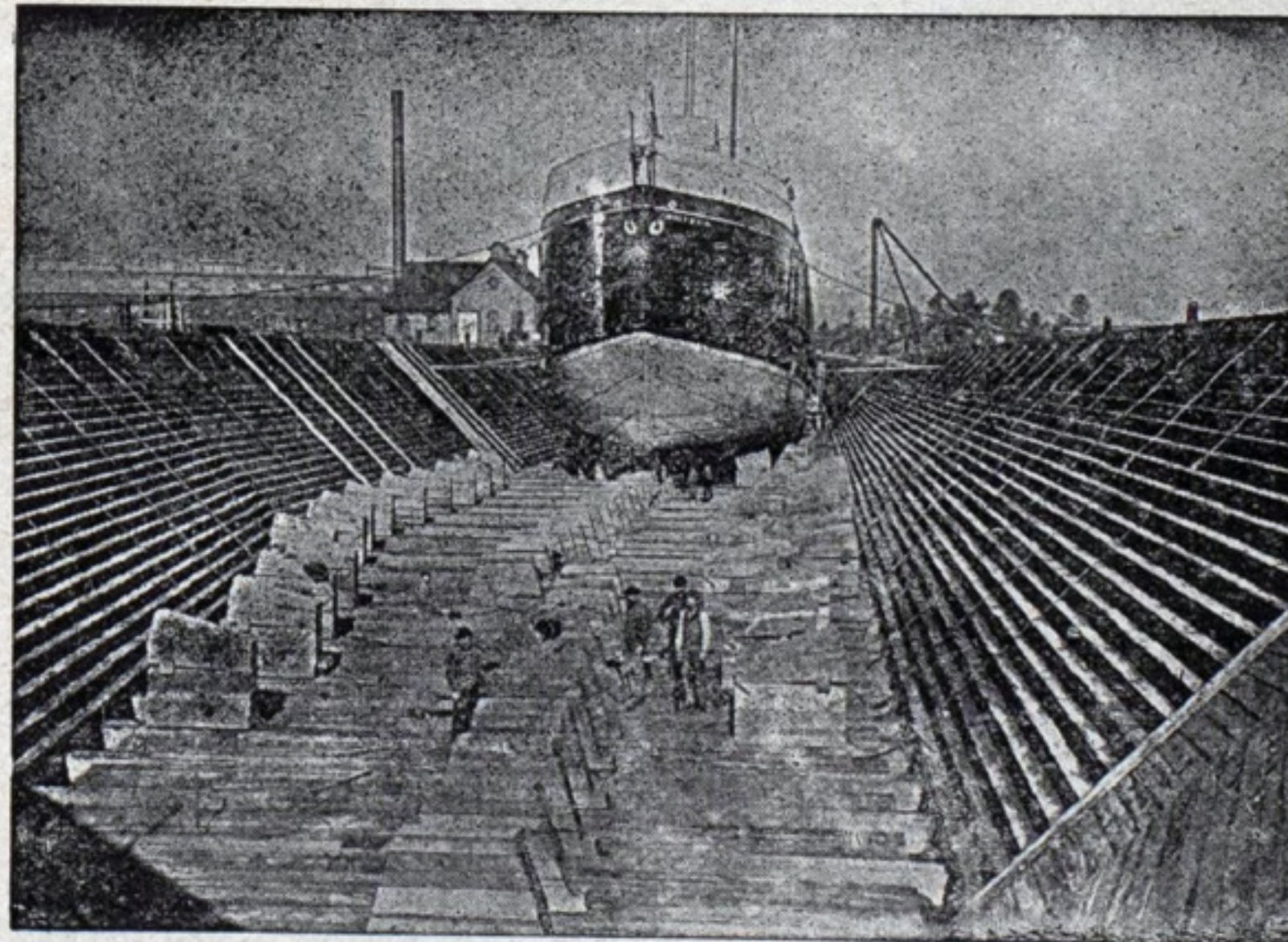
STEEL AND METAL SHIPS

Of all Classes built on shortest possible notice at our yards at WEST SUPERIOR, WIS., and also at EVERETT, WASH.

PHOTOGRAPH OF 300-FOOT BOAT IN DOCK.



Plates and Material always on hand to repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.



SIZE OF DOCK

Length, Extreme.....	587 feet.	Entrance, Top.....	55 feet 9 in.
Breadth, Top.....	90 " 4 in.	Entrance, Bottom.....	50 "
Breadth, Bottom.....	52 "	Depth over Sills.....	18 "

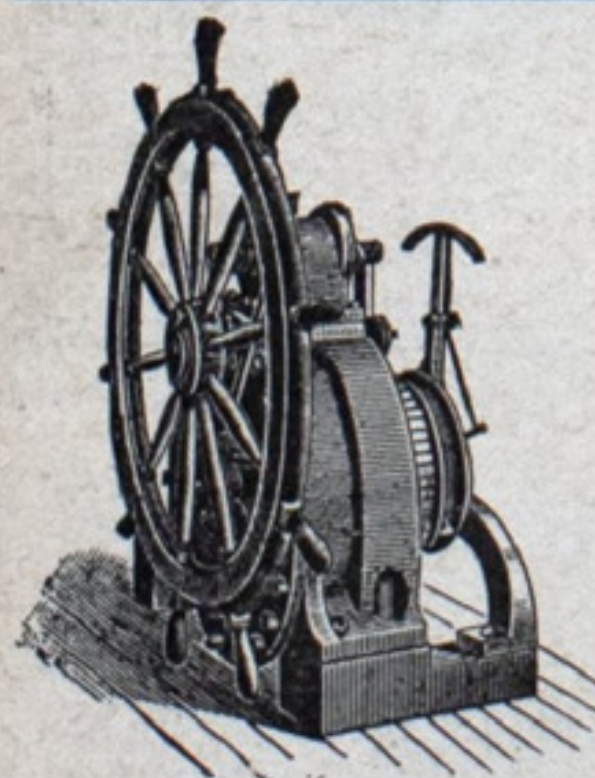
LARGEST DRY-DOCK ON THE LAKES.

Prices for Repairs and Docking same as at Lower Lake Ports.

SUPERIOR, WIS.

A Number of Propeller Wheels in Stock at Dry-Dock.

Queen City Patent Hydraulic Steerer.



The best and most reliable.

Generates no heat in pilot house.

Has large hand wheel.

Can be changed from power to hand steering instantly.

A favorite with pilots.

Send for References.

Queen City Engineering Co.

BUFFALO, N. Y.

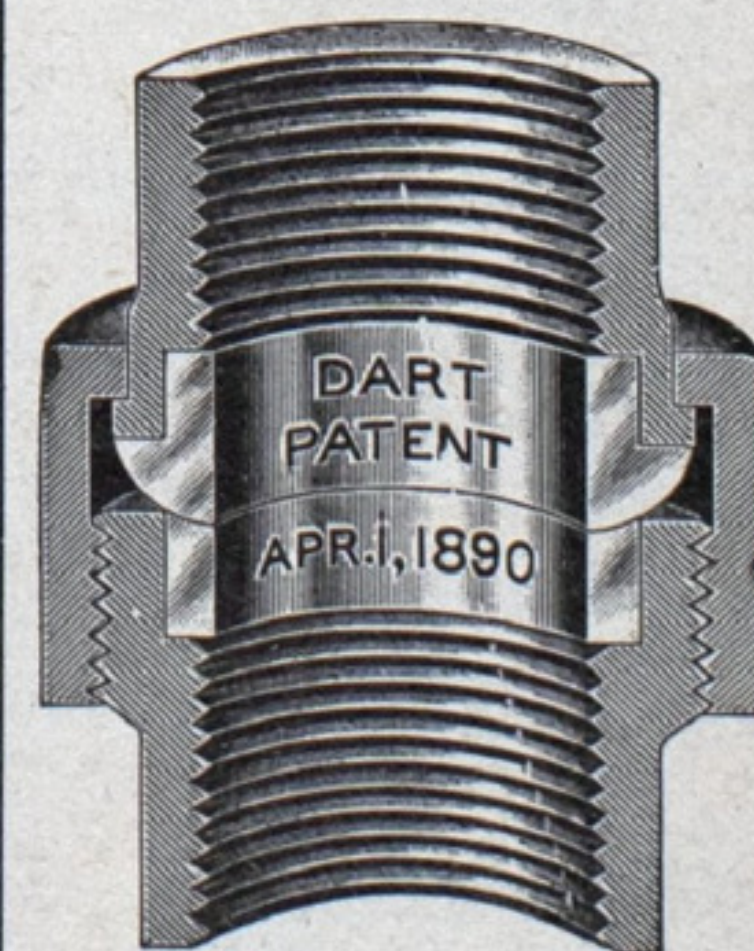
MARINE REPAIRING

AT MANITOWOC, WIS.

The Goodrich Transportation Co. are prepared to do all kinds of Repair Work to Machinery. Also Joiner Work.

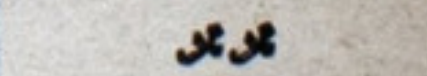
Goodrich Transportation Company's Repair Shops include complete Carpenter and Joiner Shop. New Modern Machine Shop. Blacksmith Shop, including Steam Hammer, Punch and Shears, etc., Brass Foundry.

Repair Shops are adjacent to Dry Dock and are equipped with best Modern Machinery. Portable Electric Drills, etc., complete Electric Power Plant for supplying motors on board ships, and lighting. Night work a specialty. All work in charge of experienced and skilled mechanics. Charges moderate. Twenty-one feet of water alongside of shops.



The Best Union

Made in the U. S.



Mnfd by the **E. M. Dart Mfg. Co.**

Providence R. I. Send for circulars and prices.

